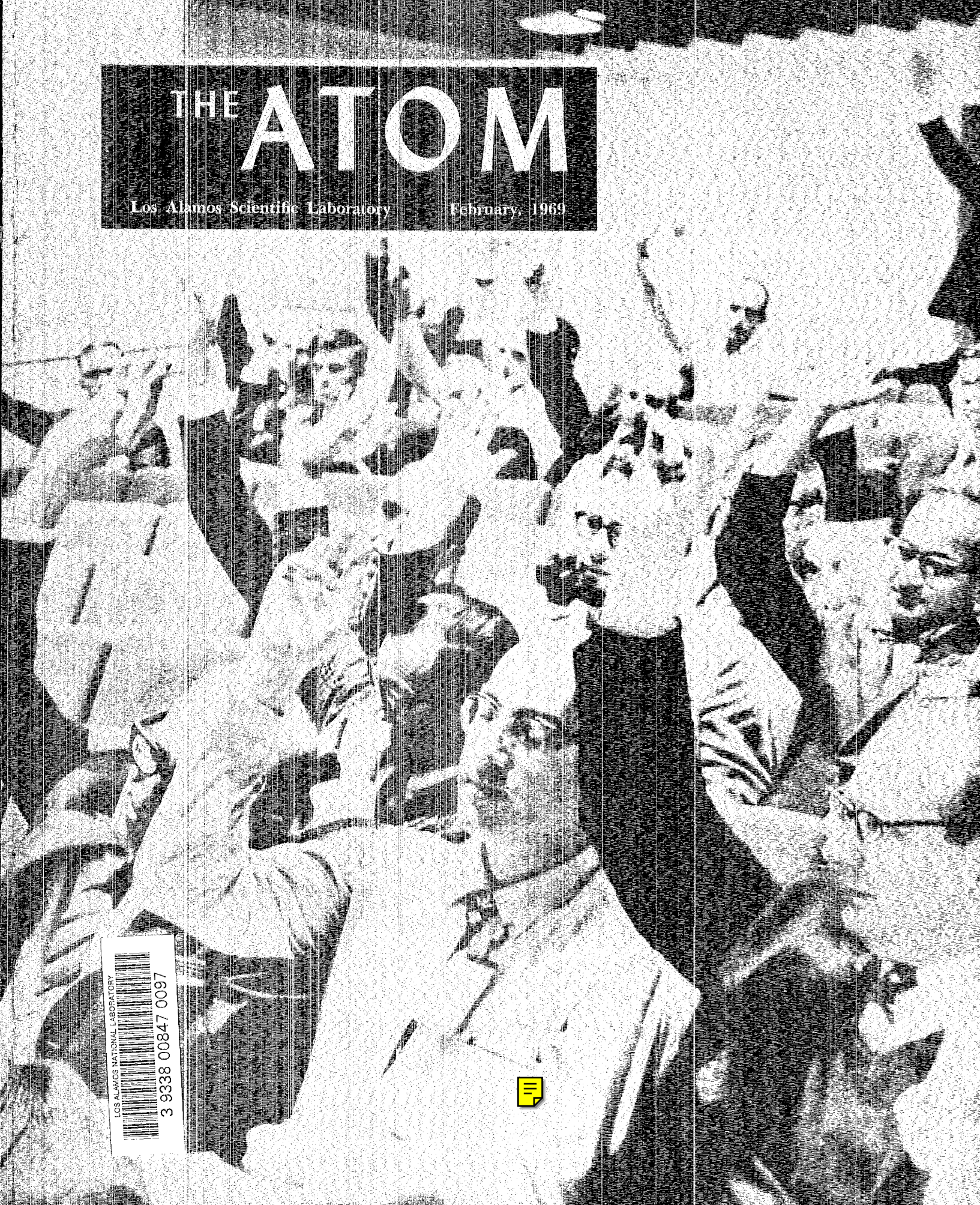
THE ATOM

Los Alamos Scientific Laboratory — February, 1969



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THE ATOM

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COVER

The Atom's cover is printed from a "negative" photograph, converted from a positive by Bill Jack Rodgers. It shows delegates to the recent LAMPF Users group meeting as they voted to adopt a charter. The story of the meeting begins on page 10.

One of the smallest sections joins forces with a "spook" group to administer the operation of

LASL's 430 Vehicles

You can "let your fingers do the walking through the yellow pages" of the Los Alamos Scientific Laboratory's telephone directory all day, but you'll never find Group SP-7 listed there. You have to turn the pages of the directory until you find the names starting with the letter R. A little better than half way down the second column on that page you will find Rivera, Eddie C.; Rivera, Jose A.; Rivera, Jose R.; Rivera, Lorenzo; Rivera, Louis D.; Rivera, Manuel E.; Rivera, Oliver M. . . . STOP! You have found it. Oliver M. Rivera is SP-7.

Although Oliver is assigned to this group, SP-7 is an accounting designation established by SP-2 to collect the costs incurred by the operation of vehicles in the SM-43 (Administration building) Motor Pool.

The vehicles in this motor pool are made available to any Laboratory employee who works in the

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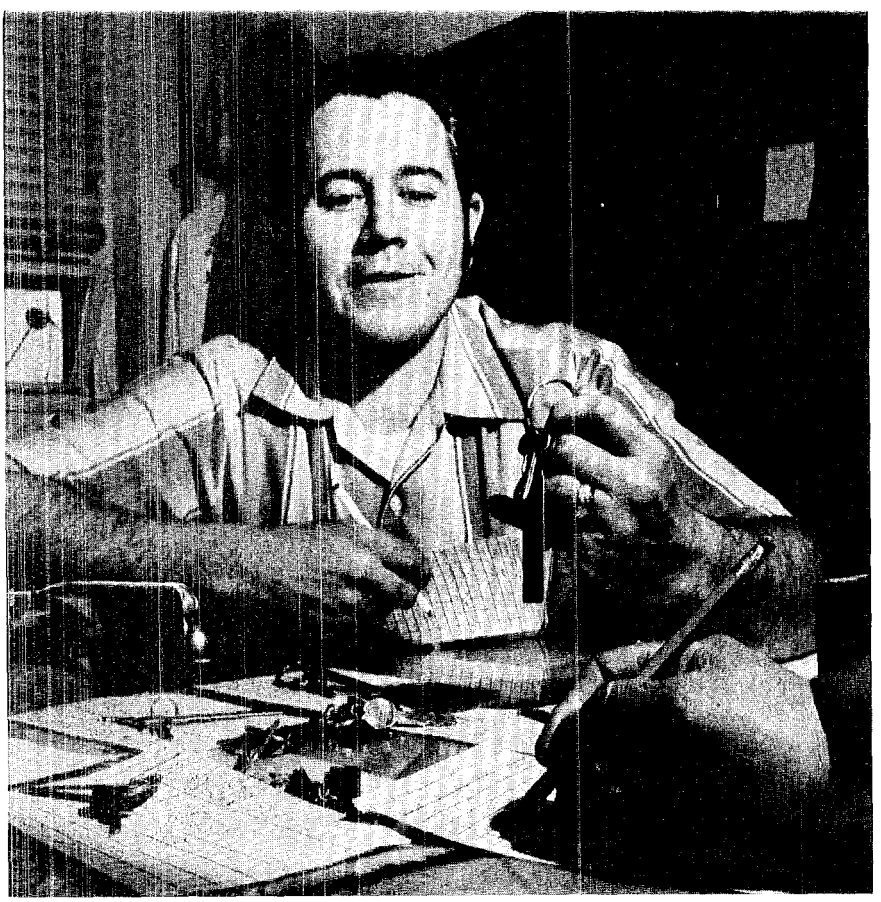

Oliver M. Rivera, SP-7, holds the keys to a vehicle while a customer fills out a trip ticket in the dispatchers office of the Administration building.

. . . LASL's 430 Vehicles

continued from preceding page

area and who needs a vehicle to carry out official business. They are also available to official visitors who have government operator's licenses. Since a given vehicle is used many times by members of many groups in any workday, the problem of determining how much to charge which group for its use is an almost impossible task. For this reason, normal maintenance and repair costs are charged to an account labeled SP-7.

Oliver assists Neno Segura, section leader and only member of the SP-2 Vehicle Control section. In combination, one of the smallest sections joins forces with a "spook" group to administer the operation of 430 vehicles assigned to the Laboratory. Of the total number, 95 of the vehicles are located in the SM-43 Motor Pool, the largest within the Laboratory complex. Segura and Rivera operate this motor pool from a central office in the Administration building; its vehicles are issued mostly to employees whose offices are located in the building.

The other 335 vehicles are assigned among 52 groups and are scattered throughout the various technical areas and sites that make up the Laboratory. These are usually issued by group secretaries or other persons designated by the group leader.

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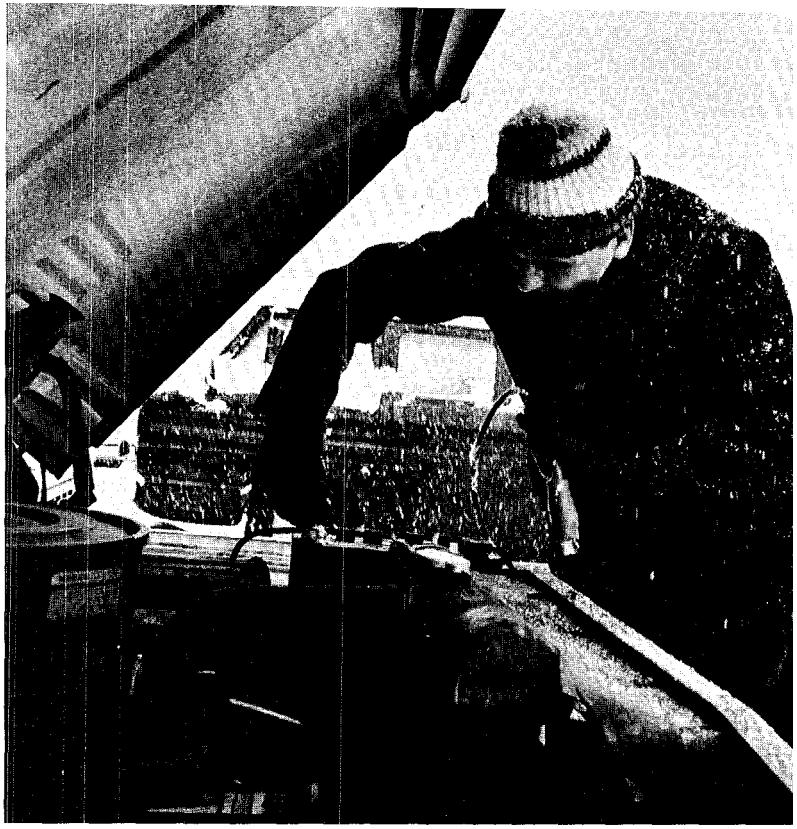
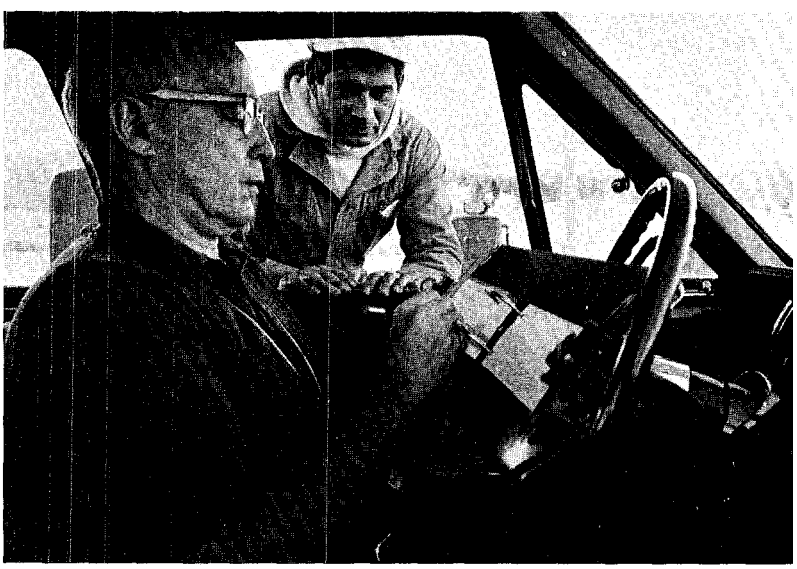


Snow-covered vehicles await the day's users in the SM-43 Motor Pool at left. Neno Segura, Vehicle Control section leader, above, connects jumper-cables to the battery of a car that won't start and, below, Donald Hall ENG-2, charges gas to SP-7. The Zia filling station attendant is Ernest Griego.



. . . LASL's 430 Vehicles

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A vehicle user must be issued a "trip ticket" on which he writes his name, group, time signed out and destination. Segura said that a vehicle can be signed out for a few minutes, an hour or all day in this manner, but for overnight trips, approval must be granted by SP-DO.

If a vehicle breaks down, the driver contacts the motor pool office. Zia Company, which is responsible for all maintenance and repairs, is called and it sends a repairman to the scene. Segura pointed out that the driver is responsible for seeing to it that the car he signs out has adequate gas and air pressure in the tires, and he should observe the performance of the vehicle. By taking a short side-trip, a driver can charge gas to his group at a Zia-operated service station where other services such as checking the oil and tires are also performed. Even though it is a driver-responsibility to see that these things are done, they are still the reasons for many emergency calls, Segura said.

If the driver observes any problems in a vehicle's performance, he should report them to the motor pool office so that arrangements can be made to have the vehicle repaired. Drivers should also check a vehicle for dents or other damage and report any found before taking it out of the pool. "It helps in the management of the fleet," Segura said.

Segura and Rivera keep a minimum amount of records. They maintain the trip tickets at SM-43, as a means of keeping track of the vehicles, and mileage and maintenance records on all LASL assigned vehicles so that they know when to coordinate minor and major tune-ups and can tell whether or not a vehicle has had maintenance that is seasonal, such as during the winter when antifreeze, lighter-weight oil, and snow tires are required.

The state of repair is a factor in determining the service-life of a vehicle. If maintenance and repairs are frequent and costly, the AEC may decide to have it replaced. Other factors that influence the service-life of a vehicle are mileage and age. These criteria vary depending on the type of vehicle.

Segura noted that by present standards, the AEC generally retires a pickup after it has been driven 70,000 miles or has been in service seven years. Sedans are replaced after eight years or 80,000 miles and trucks of five through 10-ton capacity are retired after 10 years or 100,000 miles.

Retiring a vehicle is known as "Bliss-lotting," Segura said. This is a term carried over from the early days of the Laboratory when military vehicles were used. When they were retired they were parked on a lot with others at Ft. Bliss, Texas, until the military disposed of them. Now, retired vehicles are usually sold by the AEC to the local public on a bid basis, Segura said.

The section leader said that the AEC determines what vehicles are to be retired two years in advance. It sends a list of those to be replaced to Zia Company which, in turn, provides Segura with a list of those being used by LASL. Segura notifies the groups using the vehicles. He also contacts the groups to see if their transportation requirements are the same, as a means of determining what type of replacement vehicles they need. For example, a group that had a sedan may find that a pickup would better serve its requirements. In such a case, the group's reply would be a pickup, and may include other specifications such as a three or four speed or automatic transmission. However, the group must justify its request.

Segura compiles the vehicle requests received from the various groups and sends a list to Zia. Zia forwards the Laboratory's requirements and its own to the AEC. The AEC considers the requirements and buys vehicles on a bid basis. "The AEC will not consider a request for a specific manufacturer's product," Segura said.

Segura said that when new vehicles are assigned to LASL, some are usually used first by organizations who will put the most miles on them such as the Protective Force which uses them around the clock in patrolling and changing shifts.

Any vehicle modifications required by using groups are coordinated by the Vehicle Control section with Zia Company.

Segura and Rivera perform many other miscellaneous duties. They issue gasoline credit cards for out-of-town trips and "courtesy" cards in the SM-40 (near the South Mesa Cafeteria) and SM-43 parking lots when "things get out of hand," Rivera said. The courtesy card is yellow and notes a parking violation. It is placed under the windshield wiper of the vehicle. One of the most common violations, Rivera said, are employee cars parked in visitor areas.

During the sumer months, when a large number of tourists visit the LASL Science Museum and Exhibit Hall, Segura supervises an attendant who controls parking in a section of the SM-200 lot (adjacent to the Science Museum and Exhibit Hall).

During the winter months duties of the two men increase appreciably. As time permits they assist in keeping the vehicles, and particularly their windows, free of snow and ice and issue scrapers when time does not permit. They assist in putting on tire chains and, when cars won't start, use another vehicle to push or pull them, or use jumper cables to get them rolling. They also pull an occasional car out of a snowbank, Segura said.

The section leader said the two most-often heard complaints about the motor pool are that the fleet is too old and that there aren't enough vehicles. "There isn't much we can say or do about either of them," Segura said. This is where Oliver has an advantage. How can anyone complain to a group that isn't.

A New Application for

Nuclear Magnetic Resonance

By Bob Masterson

Non-scientists, who have become accustomed to hearing of physicists doing research with unusual "beasts" with such mind-bending names as synchrocyclotrons, pulsed ruby lasers, and neutron diffractometers, might not question that a recent experiment by a Los Alamos Scientific Laboratory physicist involved the use of a Rattus norvegicus. They might not, that is, unless they recognized Rattus norvegicus as the scientific name for a rat —a common enough item in biological or medical research but a fairly rare (we hope) visitor to a physics laboratory.

The experiment in question, performed by Jasper A. Jackson, Jr., of the Los Alamos Scientific Laboratory's Physics division, not only was an application of physics techniques to a problem in biology but also constituted a scientific "first". Jackson placed a rat in the sample holder of a nuclear magnetic resonance (NMR) spectrometer and recorded the first, as far as he can determine, NMR signal ever obtained from a whole living animal. This experiment demonstrated in principle that NMR techniques can be used to provide information on the body composition of a living animal.

Although his method remains to be refined into a practical procedure, Jackson's work could have far-reaching implications in biological, medical, and agricultural research. This particular work also demonstrates the advantages of the free and

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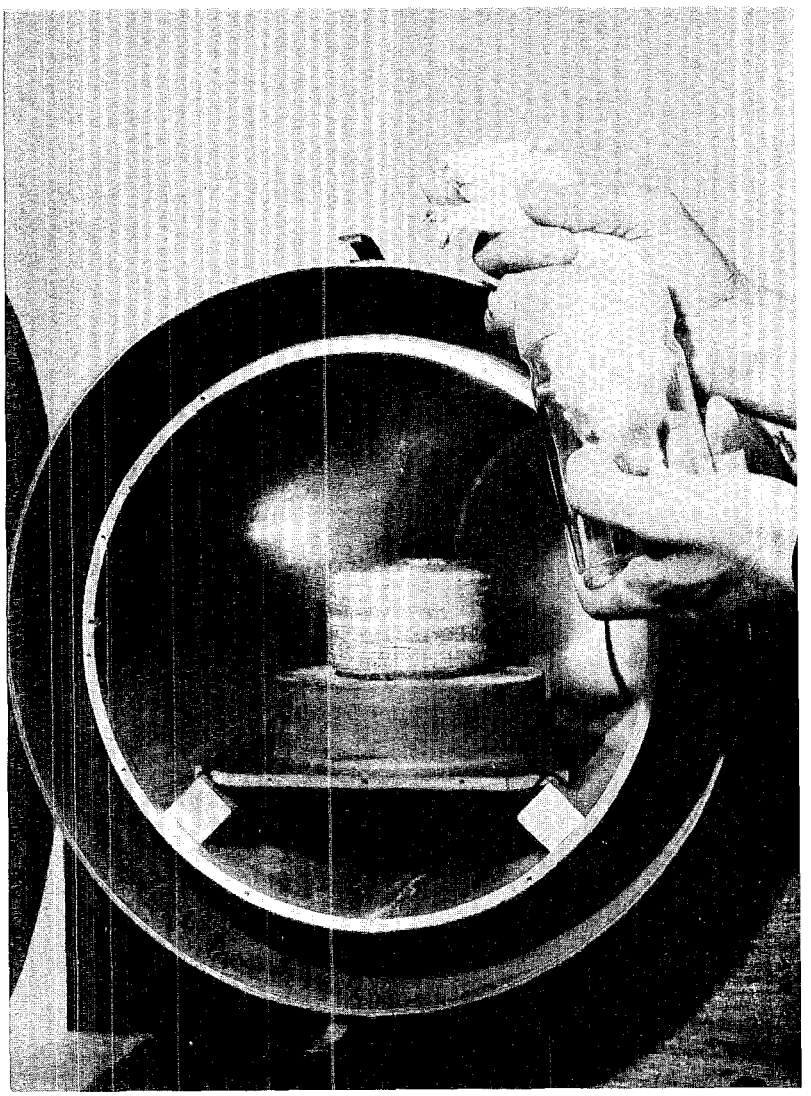

An anesthetized rat is placed in a bottle which will then be put into the sample coil in preparation for taking NMR data.

A New Application . . .

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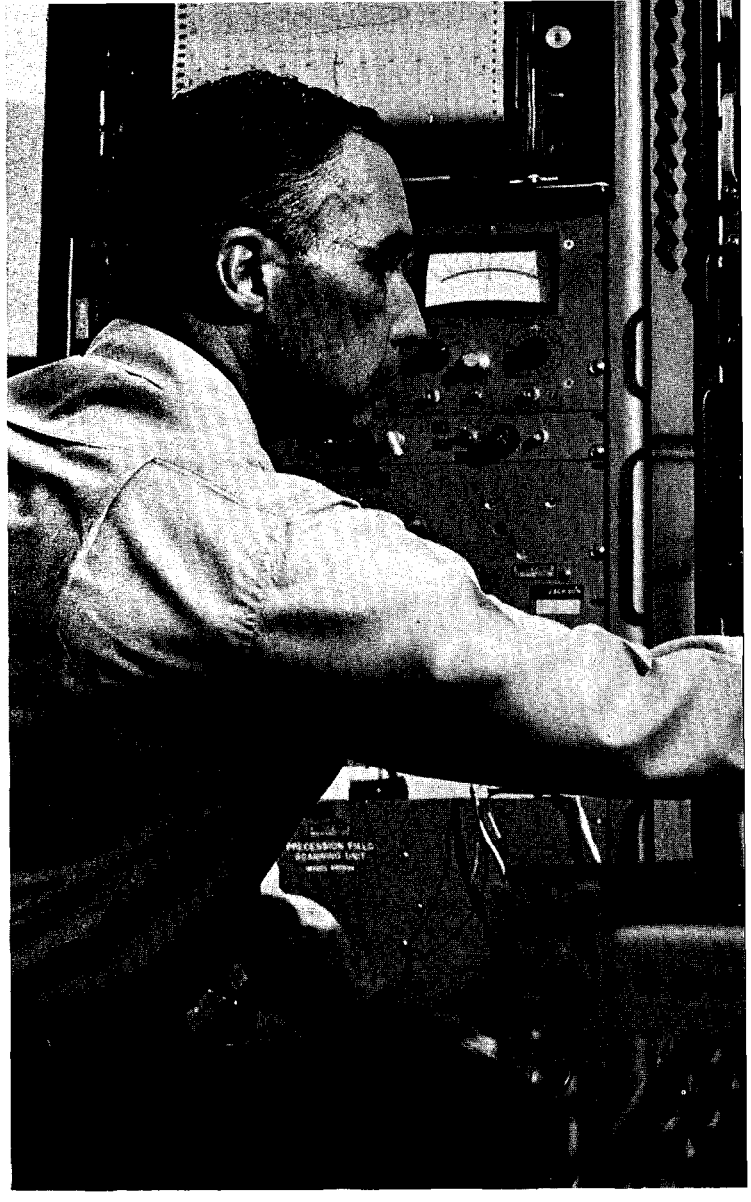
easy exchanges of information between scientific disciplines that are characteristic of the Los Alamos Scientific Laboratory.

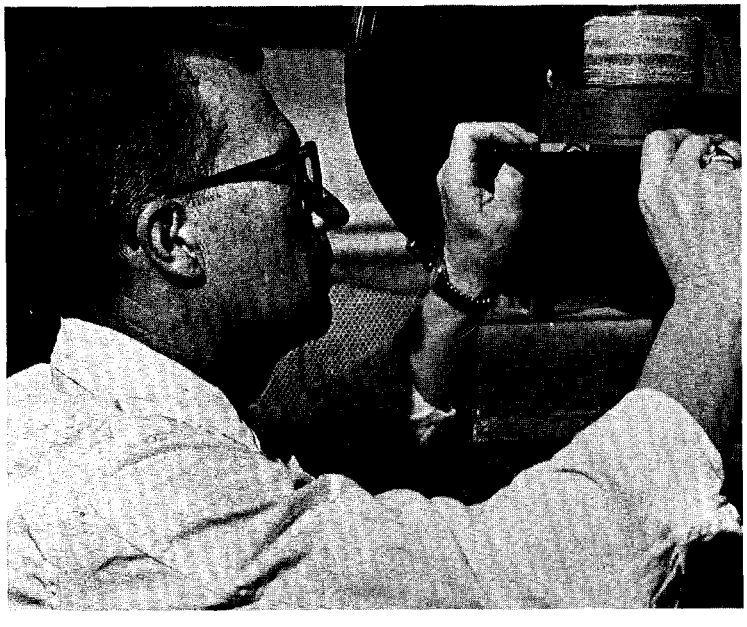
Nuclear magnetic resonance has been a powerful tool for studying nuclear, atomic, and chemical structure since it was first observed in 1946 by Felix Bloch at Stanford University and E. M. Purcell at Harvard University, who shared the 1953 Nobel prize in physics for their discovery. The phenomenon of NMR depends upon the fact that an atomic nucleus, which has a positive electrical charge, spins on its axis and therefore acts like a tiny bar magnet since moving electrical charges (such as the current flowing through the coil of an electromagnet) produce a magnetic field. The strength of the magnetic field of a nucleus depends upon the particular combination of protons and neutrons making up that nucleus.

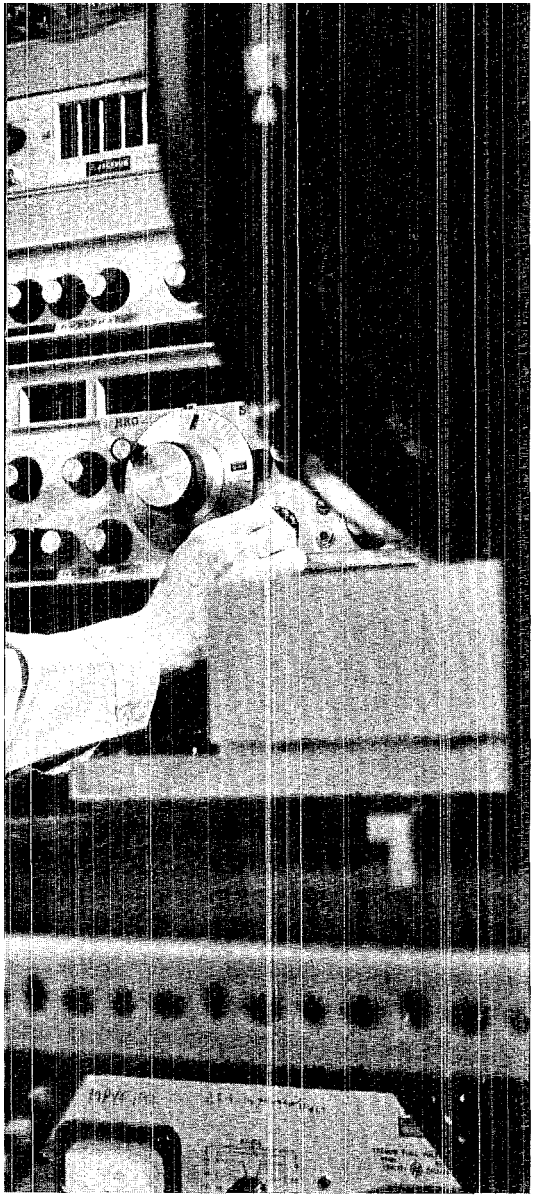
Because of its spin and its magnetic properties, if a nucleus is placed in a steady (d.c.) magnetic field it precesses or gyrates about the direction of this magnetic field with a frequency which depends upon: (1) its own nuclear properties, (2) the strength of the steady magnetic field, and (3) the chemical and physical form of the sample. What Bloch and Purcell discovered was a way of determining this nuclear precession frequency by impressing an oscillating radiofrequency (rf) magnetic field on the nuclei under study.

When the frequency of this impressed magnetic field just matches, or is said to be in resonance with, the precession frequency of the nuclei, the nuclei absorb energy from the rf field. This energy absorption, which occurs only at or near the resonance frequency, takes the form of a reversal in the orientation of some of the tiny nuclear magnets in a sample of a substance. This results in a change in the magnetic fields in the sample which causes an electromotive force (voltage) to be induced in a detector coil, placed around the sample, in exactly the same way in which changing magnetic fields induce a voltage in the windings of an electrical generator.

The resonance, and induced voltage signal, can be produced in either of two ways. The external steady magnetic field strength can be held constant, and the oscillating rf magnetic field frequency can be adjusted to match the nuclear precession frequency; or the rf field frequency can be held fixed, and the external magnetic field







strength can be varied until the precession frequency matches the rf field frequency. In practice it usually turns out to be easier to vary the steady magnetic field strength and keep the oscillating field frequency fixed.

A NMR spectrometer, therefore, consists of a sample holder located in a steady magnetic field and mounted inside a coil to impress the oscillating rf magnetic field. The output voltage signal can either be detected by the same rf coil or by a second coil also surrounding the sample. These induced voltages are very small, and the signal from the detector must be amplified electronically many times. Since the precession frequency of the nuclei depends on both their own magnetic properties and on the magnetic interactions with neighboring nuclei, NMR techniques can be used to study the nuclei themselves or to investigate or identify molecular structure and chemical interactions.

Jackson became involved in the use of NMR at LASL in 1953, and his interest in this field has remained constant since then. Until moving to the Physics division (P-DOR) in 1964, he was with the CMR and CMF Chemistry and Metallurgy divisions.

He built his present NMR spectrometer for an experiment of another P-DOR researcher, Bob Watt, who needed a large sample size—200 cubic centimeters (cc) as compared to usual NMR sample volumes of 0.1 to 3 cc. This large sample size called for a special design to which Watt contributed.

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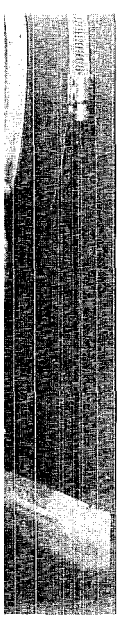
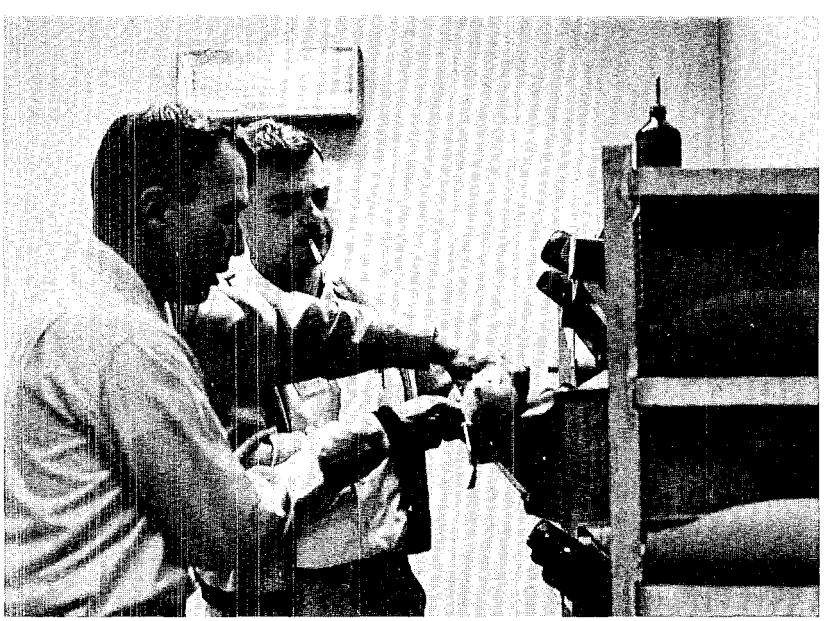


Jasper A. Jackson, P-DOR, makes an adjustment to the controls of his NMR spectrometer (above). The NMR traces are produced by the strip-chart recorder seen above his head. The large cylinder at right is the iron magnetic shield which encloses the large solenoid and sample coil of the spectrometer. At left, Raymond E. Squires, SD-5, who works in the P-12 branch machine shop, checks the alignment of the sample coil support of the spectrometer, which he helped to fabricate and assemble. At right, Jackson and L. M. Holland, H-4, check a potential subject for NMR analysis.



A New Application . . .

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The steady magnetic field is provided by an air-core solenoid 12 inches in diameter and 36 inches long. The solenoid consists of four sets of windings, each of which is made up of two layers (a right-hand winding over a left-hand winding) that are precisely laid into threaded grooves cut on a lathe into a cylindrical aluminum form. A soft-iron shield, 1/8-inch thick with 1-inch-thick end-plates, surrounds the solenoid to block out stray magnetic fields. Electrical cables pass through 1-inch center holes in the end plates. A stable current for the solenoid is provided by a variable (up to two amperes) d.c. power supply. During operation the solenoid produces a magnetic field of up to 10 gauss, with a uniformity of one part in 10,000 over the 200 cc central solenoid volume.

The sample coil, with a diameter of three inches and a height of three inches, consists of 400 turns of nylon-covered litz wire—fine-stranded wire with each strand individually insulated to reduce electrical resistance at radio frequencies. The sample coil, when in place in the center of the solenoid, is connected by a complex set of a.c. circuits to a rf Wheatstone bridge, which incorporates an identical reference coil, and to a preamplifier and amplifier. The Wheatstone bridge detects the induced voltage signal from the sample coil by comparing the sample coil with the reference coil. The usual operating frequency for the sample coil and bridge is 40,000 cycles per second (Hz), although it can be operated at 30 Hz.

The signal output from the amplifier is fed to a strip chart recorder which shows changes in signal amplitude versus solenoid magnetic field strength.

In addition to Bob Watt's help in the early design stage, significant contributions to the design and construction of the spectrometer were made by several others. Raymond E. Squires (SD-5), of the P-12 shop, helped wind the large solenoid in the Sherwood Project coil winding room. He also built the spectrometer mounts and the spacers around the solenoid, did other miscellaneous machining and fabrication jobs, and helped with the assembly of the spectrometer. Richard D. Hiebert, (P-1), designed the preamplifier, and Allan F. Malmberg, then a T-7 staff member, used a LASL computer code, NET II, to analyze the a.c. electrical circuit designs to optimize the NMR signal transfer from the sample coil to the bridge circuit. John F. Buchen, of the CMB-7 instrumentation and engineering development group, contributed advice and assistance on the spectrometer electronics.

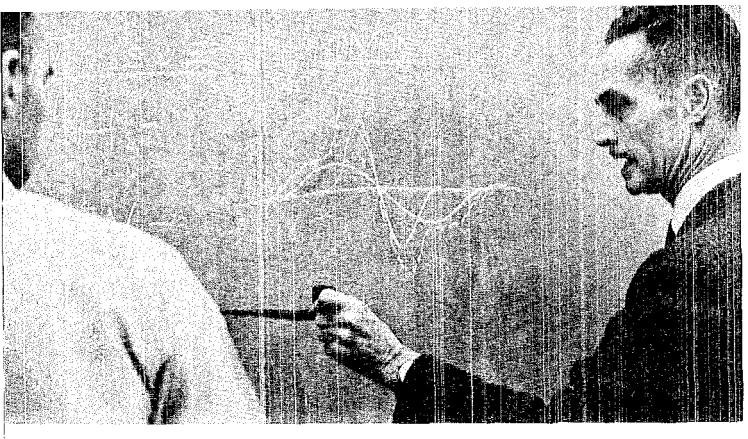
Jackson's NMR spectrometer was not the first with such a large sample volume, but none of the earlier devices had been used for biological research. It was while listening to Mack J. Fulwyler, (H-4), describe, at a seminar, the new electronic cell separator he had developed, that Jackson began thinking in terms of applying physics instrumentation to biology and realized that his new NMR spectrometer could be used to look at large biological samples and could even be a whole-body spectrometer for an animal such as a mouse or rat.

His next move was to talk to Wright H. Langham, H-4 group leader. From Langham, Jackson learned that several isotopes detectable by NMR methods are important in biological systems. These include hydrogen 1 (^{1}H), phosphorus 31 (^{31}P), and nitrogen 14 (^{14}N). Body composition can be roughly divided into water, fat, protein, and bone. Hydrogen 1, whose nuclei consist of a single proton, is a major component of the water, fat, and protein. Nitrogen is associated with muscle (protein), and phosphorus is important to bone structure. Langham also pointed out that there is presently no satisfactory method for measuring the gross body composition, for example skeletal mass, of an animal without killing and dissecting it.

Langham agreed with Jackson that NMR would be worth a try, and Jackson started looking at samples of biological material to see if NMR would give any data. Henry Taube, a professor of chemistry at Stanford University and a LASL consultant, suggested concentrating on the signal from hydrogen.

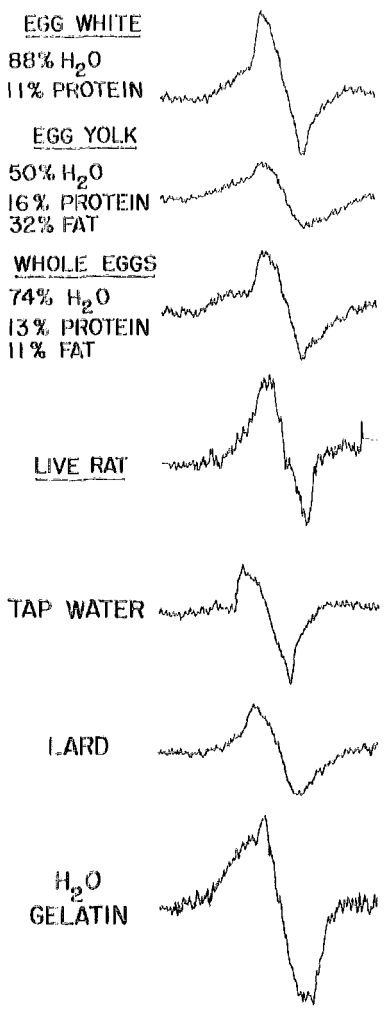
The main results of Jackson's first efforts were the startled looks from the clerks at the meat market when he asked to have his sample bottles filled with suet and hamburger, although he did get some tentative NMR data.

Then Langham suggested he look at gelatin (a mixture of almost pure protein and water), samples of which Langham supplied. Jackson's wife Betty, a biologist who worked in H-4 from 1950 to 1958, suggested examining eggs which roughly approximate whole body composition in a much simpler system. When these samples, as well as lard (pure fat), were checked, Jackson got meaningful results that showed that the NMR spectra



Wright Langham, H-4 group leader, discusses with Jackson, the implications of NMR techniques to biomedical research.

Some of the nuclear magnetic resonance traces obtained by Jackson in his experiments. The shapes of these curves, determined by the composition of the samples, are a kind of "fingerprint" that potentially could be used to identify or analyze various materials. The "live rat" trace is the first known NMR signal ever recorded from a whole living animal.



from these various organic materials were distinctive enough to clearly discriminate between, for example, egg white (protein and water), egg yolk (protein, water, and fat), and whole eggs.

Encouraged by these results he tried dead mice and then the live anesthetized rat with which he obtained the historic first whole-body NMR spectrum from a living animal. The animals, and considerable support and advice, were provided by J. F. Spalding and L. M. Holland of H-4. The rat, incidentally, would not have felt a thing even without the anesthetic. It was anesthetized to reduce his body movement. As it was, the Wheatstone bridge detector was very sensitive to the rat's respiratory motion which had a frequency of about one breath per second. But Jackson found that the oscillations could be averaged by taking data over a 10-second period, and fair NMR traces could be recorded.

These experimental results with the gelatin, eggs, lard, and finally the living animal, although preliminary and obtained only from the detection of hydrogen, definitely show that nuclear magnetic resonance has potential as a method for the nondestructive analysis of animal body composition. Possible applications for such an analytical technique include basic studies of gross body composition, medical research on effects of disease on body composition, and agricultural studies on animal nutrition. These results also indicate that refinement of Jackson's technique, by the addition of more complex electronics, may allow detection and measurement of nitrogen and phosphorus. A ^{14}N signal would be another measure—in addition to the hydrogen—of body protein and might allow discrimination between muscle protein and other protein. The ^{31}P signal would be a measure of the skeletal mass of the animal.

Although there are no plans at LASL to extend the whole-body NMR work, great interest in these results has been shown by researchers at other institutions. Since an article on this work, coauthored by Jackson and Langham, appeared in the *Review of Scientific Instruments* they have received more than 50 requests for reprints from all over the world, and they have been invited to describe the whole-body NMR technique at scientific meetings. It is quite possible, therefore, that nondestructive, whole-body nuclear magnetic resonance measurements may some day become very important to biological and medical research.

A Charter and Executive Committee for LAMPF Users

"The success of LAMPF will depend, not only on LASL use but, more importantly, on how effectively it is used by people outside Los Alamos." These were the words of MP-Division Leader Louis Rosen at the organizational meeting of the Los Alamos Meson Physics Facility Users group here two weeks ago.

The facility, which is now under construction and is expected to be operational in 1972, is to be utilized by the Los Alamos Scientific Laboratory and, by other institutions from throughout the United States. For this reason, Rosen's words were aptly spoken to a delegation whose job it will be to provide a channel of communication between LASL and various research scientists from all parts of the country who will be conducting experiments at LAMPF.

The Users group took two important steps in this direction by adopting a charter and electing the initial Executive committee.

The more than 75 delegates gave the charter their unanimous approval after about an hour of discussion, during which its members proposed several amendments from the floor. Three of the proposed amendments were approved by the delegation while an identical number was defeated.

Harry Palevsky, Brookhaven National Laboratory, was elected chairman of the Executive committee for a one-year term, and David A. Lind, University of Colorado, became chairman-elect for a two-year term. Elected as members of the committee for one year were Roy Haddock, UCLA; Harvey Willard, Case Western Reserve University; and Arthur Poskanzer, Lawrence Radiation Laboratory, Berkeley. Lewis Agnew, MP-6, was appointed as liaison officer for the Users group.

The meeting was opened by Gerald C. Phillips of Rice University, who, until the elections, served as temporary chairman. He outlined the membership requirements of the group and said they should be as broad and democratic as possible. "All interested scientists and engineers are welcome to apply." In stressing "interest" as a requirement, Phillips pointed out that the charter requires each member to indicate, in writing on an annual basis, his desire to remain on the membership list.

Victor Beard, executive director of the Associated Western Universities, proposed the only charter amendment to be decided with a close vote. His proposal concerned the number of members of the Users group necessary to amend the charter if it was adopted. He felt the number should be a "simple majority" in lieu of the two-thirds majority called for in the charter draft. Among those voicing opposition to such an amendment was William D. Ploughe, Ohio State University, who said that if there is sufficient interest among the membership for a charter amendment, then two-thirds is a sufficient number. The Beard amendment was defeated by a 31-26 vote.

The election of officials to serve on the group's first Executive committee, adhered to a slate of officers proposed by the ad hoc nominating committee headed by Phillips. There were no nominations from the floor for the offices of chairman and chairman-elect, but three names were placed in nomination for members of the committee. These three, however, were defeated by those on the slate pro-

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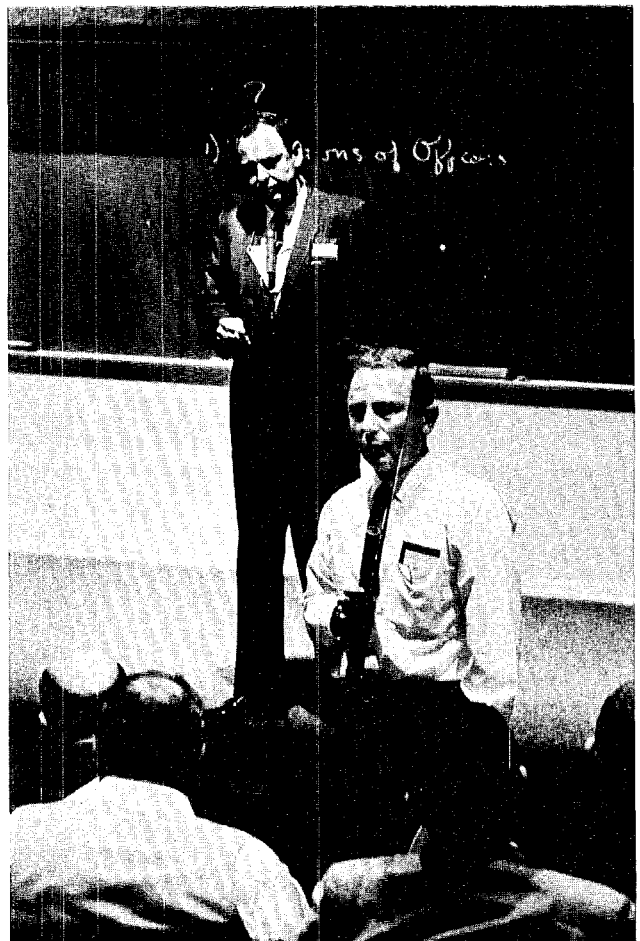
Construction progress on the $55-million Los Alamos Meson Physics Facility is pointed out to the newly-elected Executive committee by MP-division Leader Louis Rosen, fourth from left. At left is Harry Palevsky, chairman of the committee. To the right of Palevsky are Chairman-Elect David Lind, and Arthur Poskanzer, member. To right of Rosen are members Harvey Willard and Roy Haddock.



Rosen was called on to answer several questions at the meeting of the Users group. Behind him is Gerald C. Phillips who served as temporary chairman.

The Charter adopted by the Los Alamos Meson Physics Facility

The Los Alamos Meson Physics Facility (LAMPF) Users group is an organization of active scientists and engineers with a special interest in LAMPF and, in particular, its research program. The purpose of this group is twofold: (a) To provide a formal channel for the exchange of information between the LAMPF administration and scientists of other laboratories who will utilize this facility for their research. (b) To provide a means for involving scientists and engineers from user groups in specific projects at LAMPF and for offering advice and counsel to the LAMPF management on LAMPF operating policy and facilities.

Through a wide representation of scientists the group will make known to the LAMPF administration the needs and desires of those scientists actively engaged in research projects. As an example of the relationship between the users community and the LAMPF administration, it is understood that some members of the Program and Scheduling committee will be selected from candidates proposed by the Users group.

1. Membership. The membership of the Users group is open to practicing scientists and engineers. The LASL-appointed director of LAMPF and university and national laboratory scientific administrators shall be invited to be nonvoting members of the organization. Following the drawing up of an original membership list, new members will be added by action of the Executive committee of the Users group upon receipt of written request. In addition, each member will indicate at the time of each general election his desire to remain on the membership list for the coming year.

2. Officers and Executive committee. The officers of the Users group shall consist of a chairman, chairman-elect, liaison officer, and three other elected members. The chairman, chairman-elect, and three elected members will constitute the Executive committee of the LAMPF Users group. the liaison officer will be an ex officio member of the Executive committee. The chairman, chairman-elect, and three committee members will be elected annually by mail ballot. The first slate of officers shall be elected by a plurality of the users attending the initial organization meeting held at Los Alamos on January 16, 1969, and thereafter elections shall be held as described in 2a, b, c, and d.

a. A chairman-elect shall be elected annually by members of the Users group by written ballot, distributed prior to October 1 to the membership as of September 1, and shall take office on January 1 of the following year. A plurality of votes cast is sufficient for election.

b. The chairman-elect will succeed to the office of chairman at the end of one year.

c. The term of the chairman of the Users group for LAMPF is for a period of one year.

d. The three other members of the Executive committee will be elected annually.

e. A liaison officer of the Users group is to be appointed by the LAMPF director in consultation with the chairman and chairman-elect of the Users group. It will be the duty of the liaison officer to act as secretary of the meetings and keep the minutes. He will request nominations, send and tally mail ballots, and generally serve as secretary to the Users group. It is further the duty of the liaison officer to keep the Users group informed by means of frequent news letters of new developments at the LAMPF and other matters of interest to the users. The liaison officer shall serve for a period of two years and can be reappointed for an additional two. He should not serve three consecutive terms.

f. A person who has served as chairman cannot be nominated as chairman-elect for a period of three years.

3. Meetings. The LAMPF Users shall meet at least once each calendar year at a time and place designated by the chairman, upon advice of the Executive committee. Notice of the meeting should be sent to the members of the Users group at least a month in advance and shall include the agenda for the meeting. The secretary-liaison officer will prepare summaries of all meetings, which will be mailed to all members, arrange details of meetings and other necessary work of the committee.

4. Procedures.

a. The Executive committee may, on its own initiative, and shall, upon instruction of a majority of the members attending a general meeting, submit questions for consideration to the full membership. Results of the deliberations of the Users group shall be communicated to the director of LAMPF.

b. The Executive Committee shall recommend to the LAMPF administration names of user scientists for consideration as members of LAMPF's Program and Scheduling committee.

c. The Executive committee will appoint a Technical Advisory panel from the membership of the Users group. The chairman of the Executive committee will act also as

Users Group

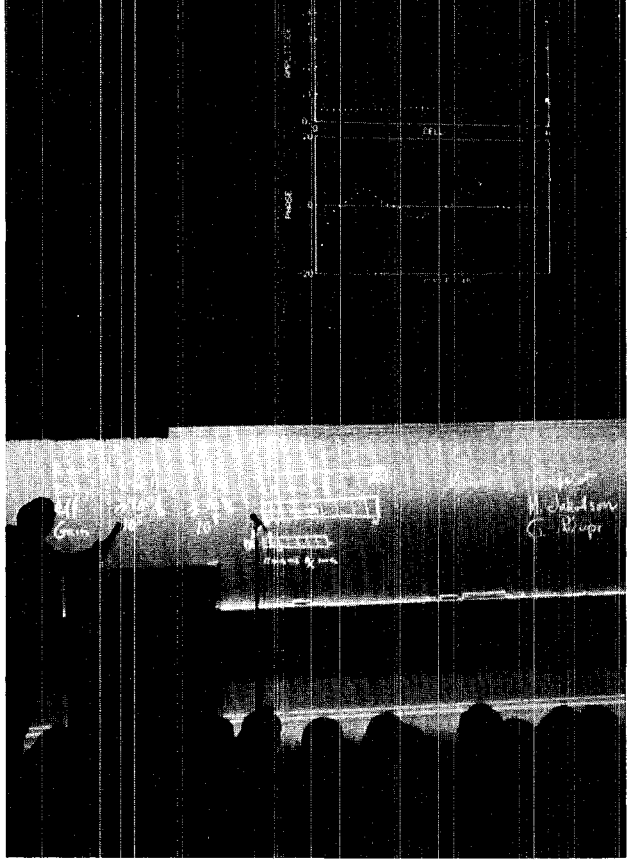
chairman of TAP. This committee shall consist of 12 members appointed for two years in such a way that six new members are added each year to take office on January 1. The duties of the TAP will be to collaborate with the staff of the LAMPF in devising new experimental facilities and evaluating future developments. The TAP will meet at least twice a year, and the chairman-elect and the liaison officer are to be members ex officio.

d. The Executive committee shall appoint a Nominating committee consisting of five members of the Users group, but not including any officers, who are charged with the duty of nominating a slate of candidates for the chairman-elect and the three other elective positions of the Executive committee. The Nominating committee may meet in person if it wishes or may transact its business by mail or telephone. The chairman of the Nominating committee will be designated by the chairman of the Users group. Direct nomination for each of the positions from the membership can be made by a petition from at least ten members, sent to the chairman of the Executive committee prior to September 15.

5. This charter shall be adopted, if approved, by two-thirds of the prospective members attending the initial meetings.

6. This charter may be amended by a written vote of the members. A proposed amendment shall be introduced at a general meeting. A two-thirds majority of the members voting is required for passage of the amendment. The vote must be taken within a month of the time the amendment was introduced.

Delegates to the meeting of the Users group vote on the proposed charter. A "reverse" of this photograph, above, was used on The Atom's cover. At left, Executive-Committee Chairman Palevsky outlined what he felt would be the initial functions of the Users group.



Darragh Nagle, alternate MP-division leader, spoke to the LAMPF Users group on the "status of accelerator design," illustrating his talk with a computer movie showing the side-coupled tanks filling with radio frequency power.

. . . LAMPF Users

continued from page 10

posed by the nominating committee.

Perhaps the most spirited discussion concerned the division of "use time" of the Meson Facility between the LASL staff and outside users from other laboratories, universities and research centers. It had been announced that about 50 per cent of the use time would be made available to outside users and equal time would be utilized by Los Alamos personnel.

Rosen, whose division is charged with the responsibility for the Meson Facility, said that the program and scheduling committee would determine which experiments would be performed and that the decision would be "on the basis of scientific merit, as it is at other laboratories." He drew a laugh from the audience, whose delegates represented more than 40 of America's major institutions, when he said that the 50 per cent figure was as definite as it could be because "it's in the Congressional Record that way."

Rosen, in serving as LAMPF director, is responsible for appointing the Program and Scheduling committee. The charter states, "It is understood that some members of the Program and Scheduling committee will be selected from candidates proposed by the Users group."

"There certainly has to be a scheduling committee at LASL," he said, "to worry about the day-to-day scheduling. We have to have this. But the long-range programs will be influenced by the Users group where you will all have a voice."

A policy board is appointed by the LASL director, Norris Bradbury. Its function is to advise the director on all matters concerning LAMPF. Rosen noted that all but one of its members are non-Laboratory personnel. It is headed by Vernon Hughes of Yale University.

"This commitee reports directly to the director of LASL," Rosen said, "and is responsible to him. Copies of their reports are sent to the Atomic Energy Commission."

R. Ronald Rau of Brookhaven National Laboratory reminded the members that the Meson Facility is in an open area and not behind a security fence. His statement, "The LAMPF part of Los Alamos is like a national laboratory," was echoed by Rosen who said that the facility's success depends on how effectively it is used by people outside of Los Alamos.

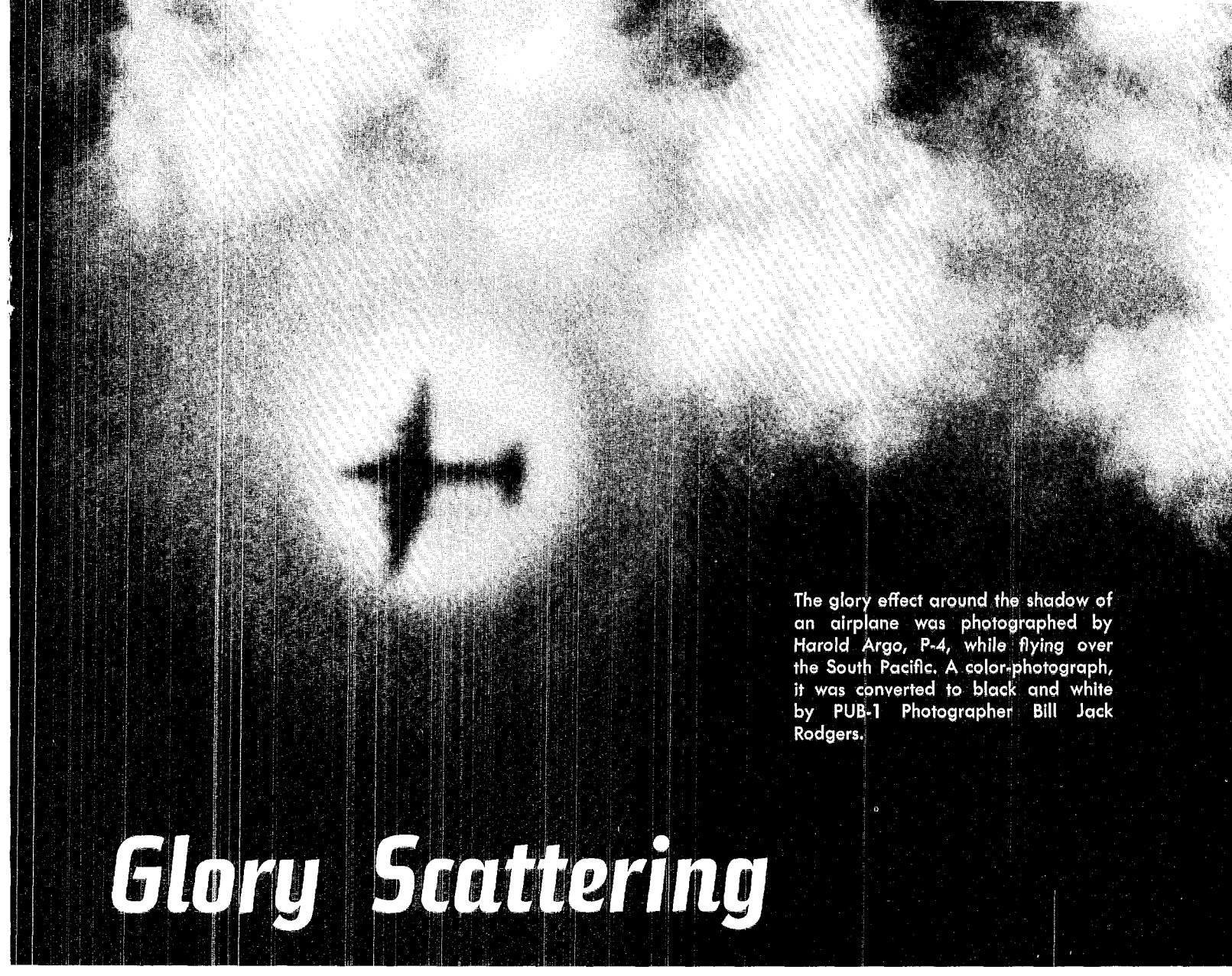
In accepting the chairmanship, Palevsky outlined what he felt the initial functions of the Users group would be.

"We have certain functions in the beginning that will change as the machine nears completion," he said, "but one of our initial functions should be to take the burden of running the LAMPF summer-study program at LASL. I feel we want Los Alamos to concentrate their efforts on getting the machine built.

"I foresee that in the beginning there will be a lot of important questions that the Users group can answer for prospective users, and we can be of extreme help to Los Alamos.

"The more we do in the beginning, the more the LASL administration will be willing to listen to our gripes and comments when the machine is running," he said.

The makeup of the Users group was the point of some discussion when it was noted that the majority of its members are physicists. The delegates, however, were apparently unanimous in their feelings that radiobiologists, biochemists, radiochemists and persons from other related fields should be encouraged to participate.



The glory effect around the shadow of an airplane was photographed by Harold Argo, P-4, while flying over the South Pacific. A color-photograph, it was converted to black and white by PUB-1 Photographer Bill Jack Rodgers.

Glory Scattering

The cause of a meteorological phenomenon is studied to determine if it is applicable in the field of nuclear physics

A circular array of colors is seen by an airline passenger around the plane's shadow on the ground; by a mountain climber around the shadow of his head on a cloud or fog bank; and by a gardener, around the shadow of his own head, against the spray of a water hose.

This is the "glory effect," a meteorological phenomenon caused by "glory scattering"—one way in which water droplets scatter light waves.

It was thought that glory scatter-

continued on next page

Glory Scattering

continued from preceding page

ing might have an application in the field of nuclear physics, in helping to explain a way in which particles are scattered by nuclei and, was the basis for theoretical studies conducted at the Los Alamos Scientific Laboratory, during the past three to four years.

The studies have been conducted by Nelson Jarmie, P-DOR, an experimental physicist temporarily turned theoretical, and Howard C. Bryant of the University of New Mexico's Department of Physics and Astronomy.

Bryant had been doing experimental and theoretical studies on the glory scattering of light by water droplets. By shooting a laser beam at one side of a suspended droplet he was able to see the beam return from the other side. What happened was that the light traveled around the droplet and was directed back toward its source. It is transported by electromagnetic forces, near the droplet's surface, as "optical surface waves."

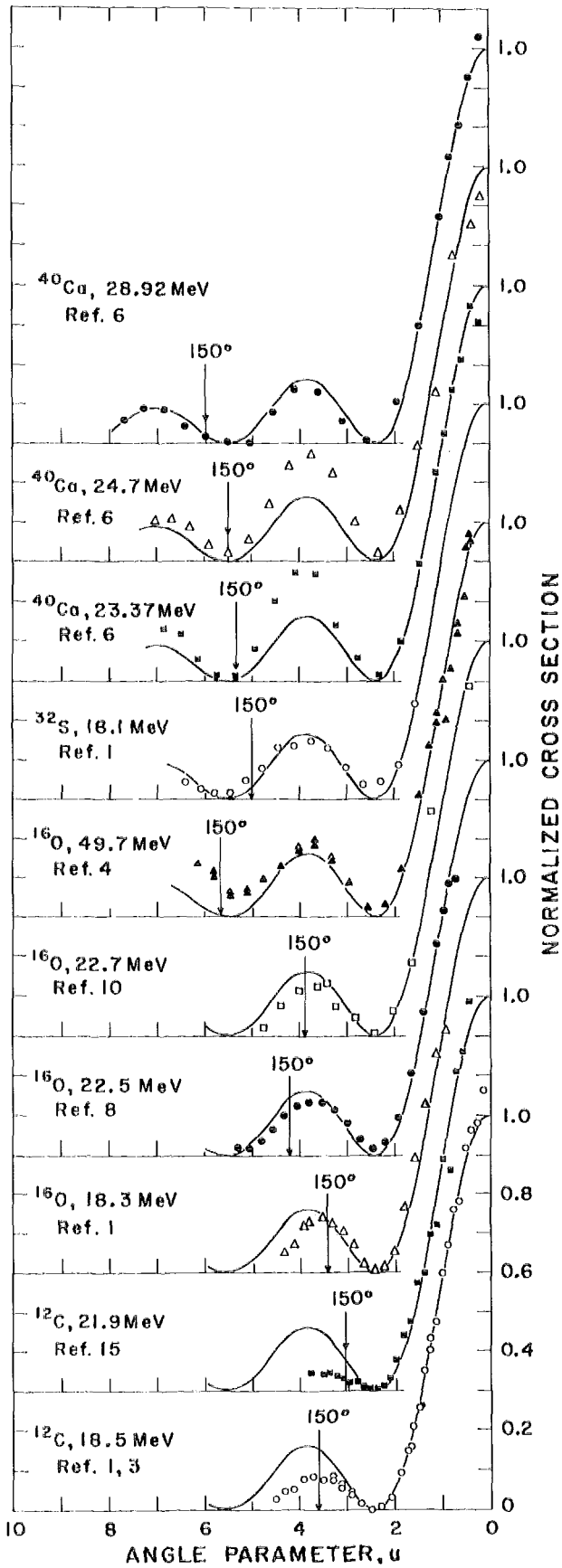
The light being scattered back toward its source produces the glory effect which can only be seen when the observer is at an intermediate point in a straight line between the light source and his shadow. In appearance, the luminous rings are brightest close to the shadow and grow fainter as the distance from the shadow increases. This is because the intensity of the returning light is greatest at the 180-degree angle and becomes weaker at lesser or greater angles.

The glory effect is not to be confused with a rainbow, although in appearance, they have similarities. For example, both appear to be circular, with bands of light in several colors, but the rainbow is generally larger, is seen at greater angles from the sun and is a more common sight.

Bryant and his students at the University were studying the mechanics of glory scattering when Jarmie became interested from the standpoint of a potential application in nuclear physics. The two scientists drew an analogy between glory scattering and certain cases of nuclear scattering, and used it to investigate back-scattering of alpha particles from certain types of nuclei and pions from protons. They predicted that the scattered particles would be transported near the surface of the nuclei as "nuclear surface waves," and aptly called this effect "nuclear glory scattering."

By extrapolation, the two scientists first predicted curves of intensity distribution versus angle, to show what the results of nuclear glory scattering might be from certain experiments. The data collected from these experiments were compared with their predictions.

Nelson Jarmie



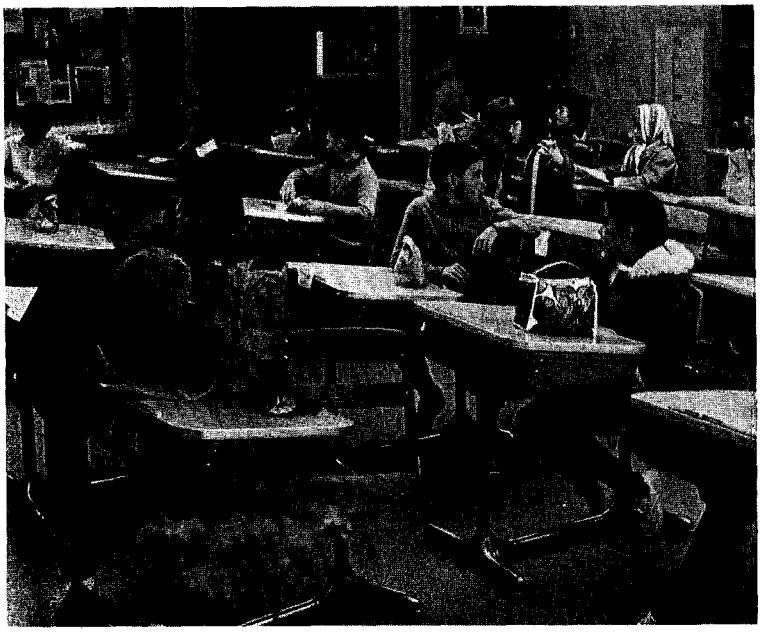
Representative experiments to which the glory scattering theory was applied are denoted by these tracings. The lines represent results predicted by Jarmie and Bryant. The open and closed circles, triangles and squares are the experimental results. Zero equals 180 degrees, where the intensity (normalized cross sections) of backscattered particles peaked in all experiments. The angle parameter is proportional to the angle away from the scatterer. (Illustration from "Annals of Physics," Vol. 47, No. 1, March, 1948, published and copyrighted by Academic Press, Inc.)

The calculated and experimental results were strikingly similar. In all experiments, the intensity of backscattered alpha and pion particles was greatest at 180 degrees, and decreased as the angle away from the particle beam source increased, just as the intensity of the glory effect around the shadow of the airplane grew fainter as the distance away from the shadow increased.

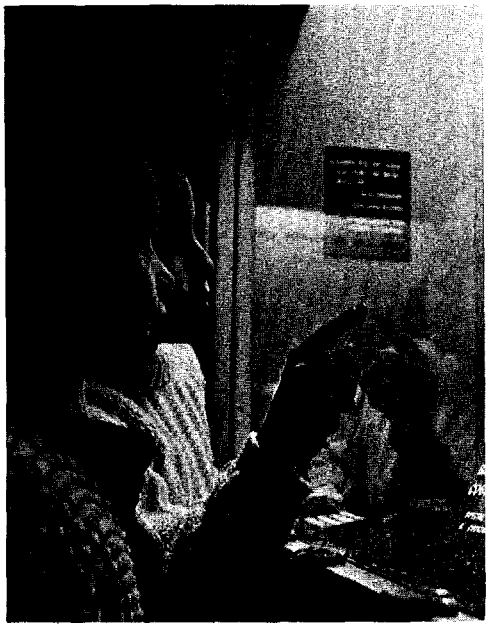
According to Jarmie, theoretical studies have, in essence, been completed. As his next step, he hopes to be able to conduct more definitive experiments using high intensity particle-beams of higher energy, especially those that the Los Alamos Meson Physics Facility accelerator will have a capability of producing when it is completed.

The young in old Santa Fe

At the Museum of New Mexico, fourth graders from Pajarito Elementary School, and their teachers, Mrs. Sue Land and Mrs. Selina Garcia, study a model of an Indian pueblo.

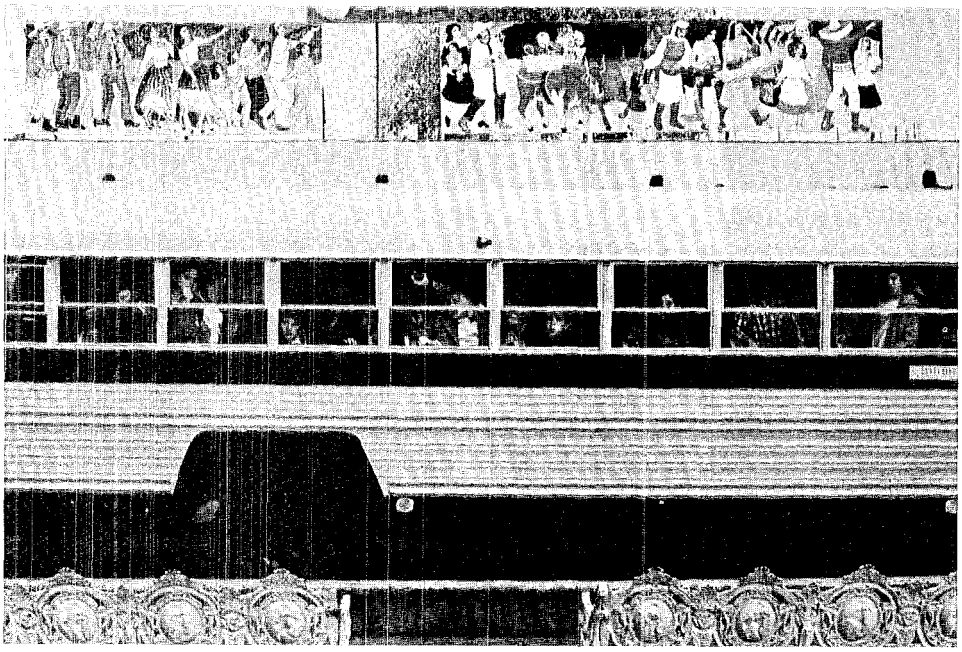


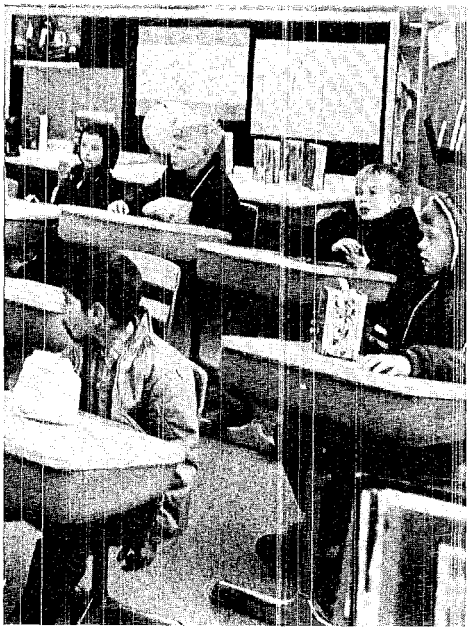
Mrs. Sue Land's students wait impatiently for the bus that will take them to Santa Fe.



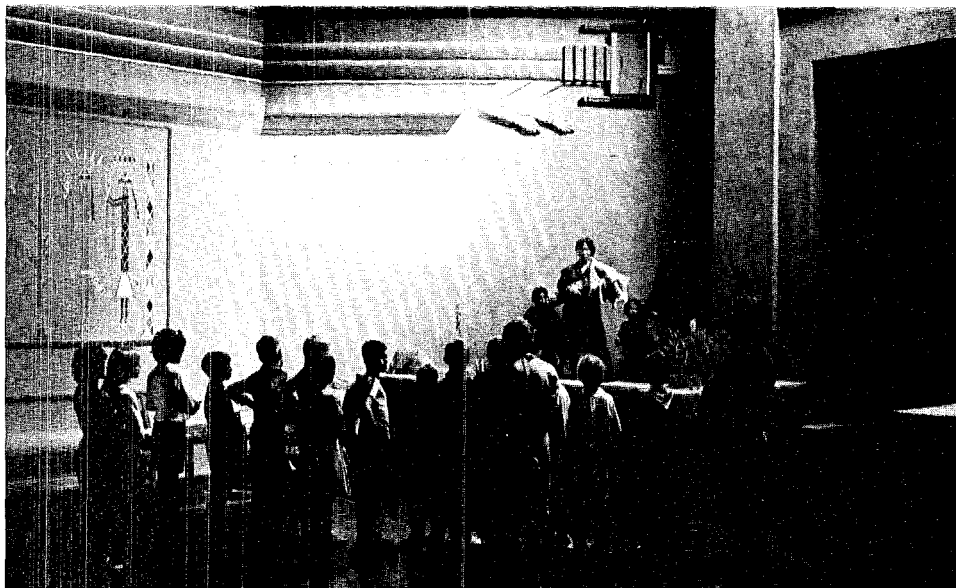
Christa Elias and Pat Chouinard, above, find an object of historical interest in a display case at the Museum of New Mexico. The territorial governor's sala, right, was described by one of the 50 fourth graders as "way out, but pretty." The tour was to supplement classroom work in social studies. The students are making an in-depth study of New Mexico's past, present and future.

By
Bill Jack
Rodgers





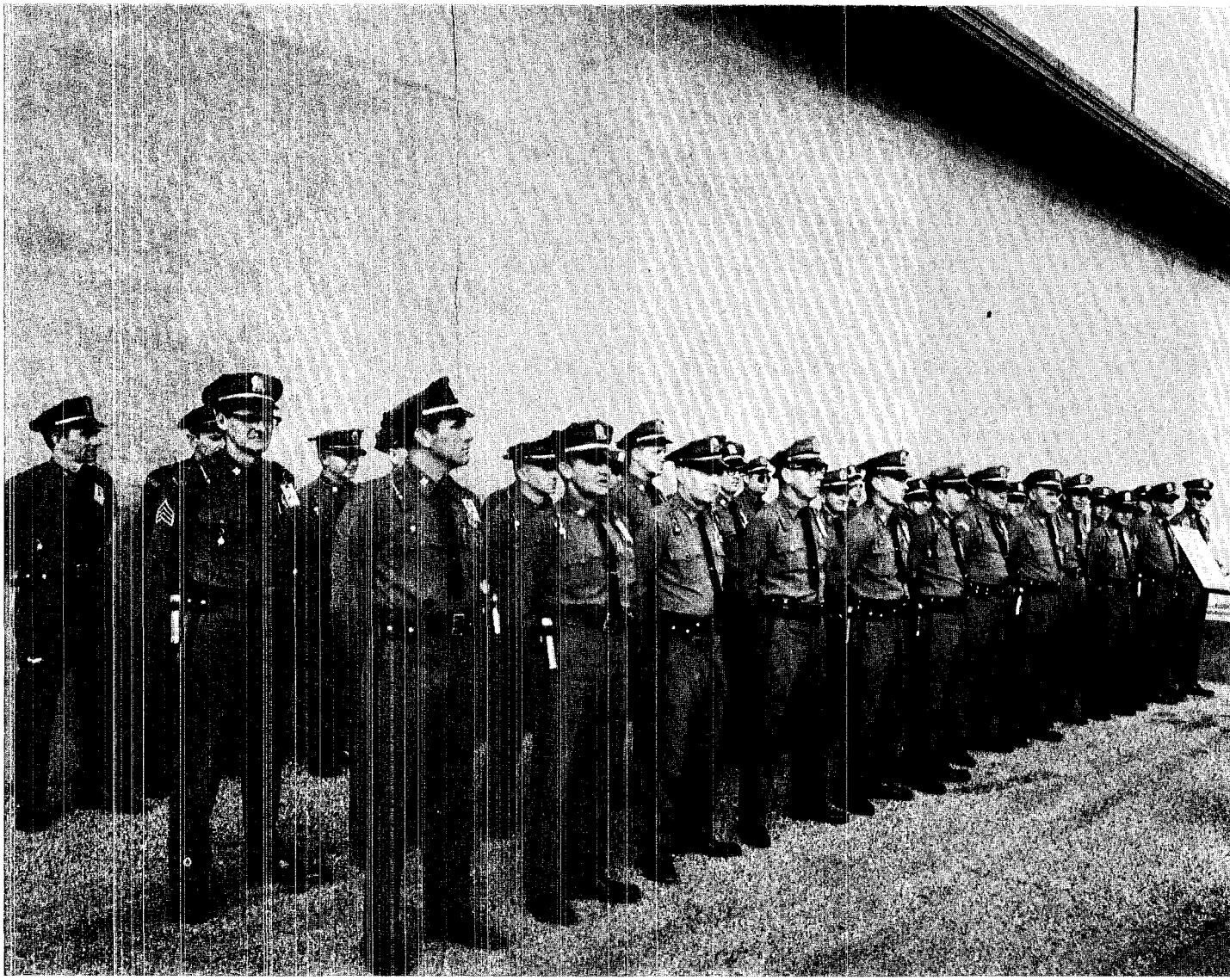
Students view replicas of Indian dwellings, below at left. They boarded the bus again, top, and traveled to the Museum of Navajo Ceremonial Art, Inc., where religious figurines, masks and "staffs of authority," right, captured their attention. Below, they scrutinize mannequins which are dressed like the modern Navajo. Above the mannequins is the "Rainbow Girl," a supernatural being that, according to Navajo tradition, protects and blesses whatever she surrounds.

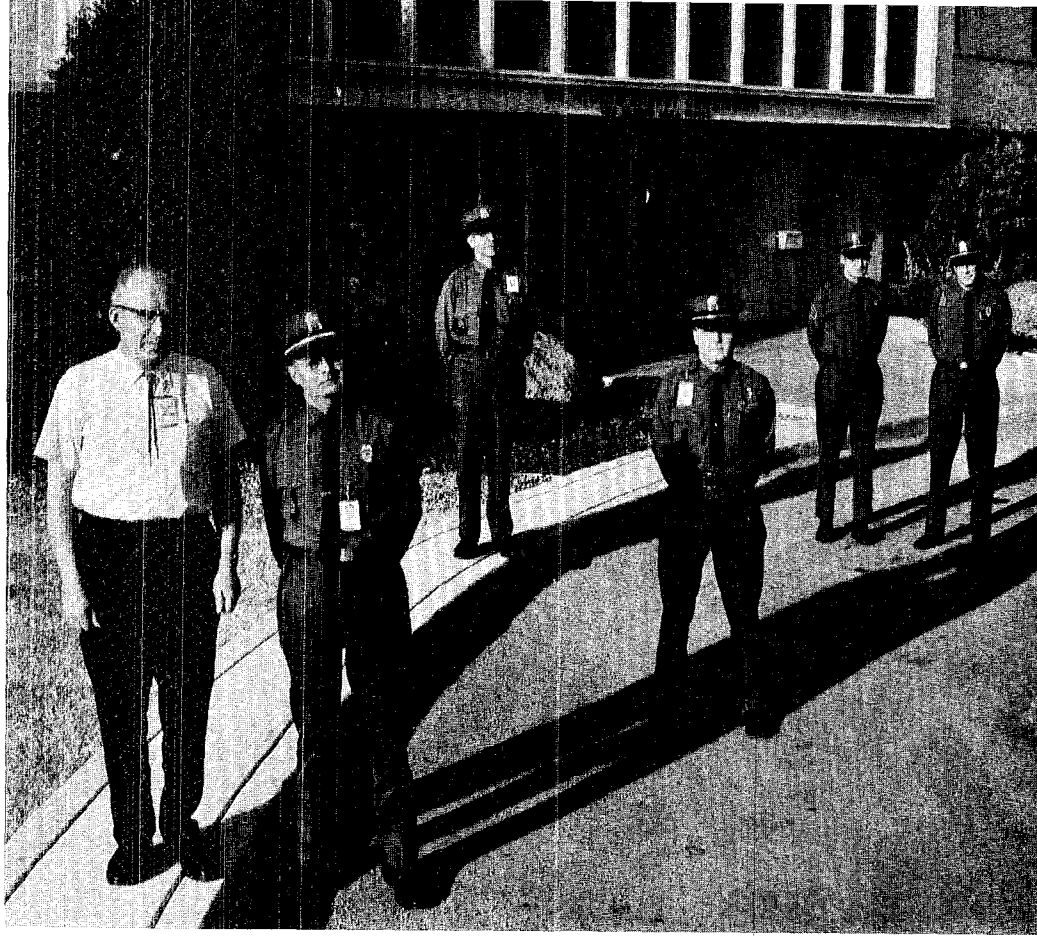


The AEC'S

Protective Force

at LASL





Prior to the start of each shift, a muster is conducted at Station 100, below. At this time special orders and instructions are given to oncoming personnel of the Protective Force. Members of the first class, right, who are still active members of the force are shown with Chief Leonard F. O'Connor, second from left, in front of AEC Headquarters in Los Alamos. From left to right are James M. Clow, administrative and training officer; O'Connor; Inspector Edward Harrall; Captain Robert A. Ham; Sergeant Carl Draves and Captain Gilbert Agee. Although not a member of the first class, O'Connor came to Los Alamos in mid-1947 as part of the original cadre.

By Bill Richmond

One of the most elite groups of security personnel ever organized and assembled recently observed its 21st birthday in Los Alamos. This group was the first contingent of the Atomic Energy Commission's "Atomic Energy Security Service" (AESS), the forerunner of the present AEC Protective Force.

It was in June, 1947, that the Civil Service Commission announced that examinations for the position of security inspector with the AEC would be held. Later that summer approximately 15,000 applicants were tested; 1,500 passed the written exams and preliminary physicals, and 100 applicants were selected for the first class after final physicals and interviews.

On Sept. 7, 1947, these 100 men reported to Kirtland Field in Albuquerque for five weeks of training. Of this first class of 100 men, 96 were graduated on October 14. Thus, from the original 15,000, only .0064 per cent were among the elite who became security inspectors for this first group of the AESS at Los Alamos.

Five of these original members are still on active duty. They are James M. Clow, administrative and training officer, plus Captains Gilbert F. Agee and Robert A. Ham, Sergeant Carl Draves, and Inspector Ed Harrall. Of the first five classes —all of which were graduated in late 1947—32 of the men are still members of the Pro Force.

Leonard F. O'Connor, present chief of the force, came to Los Alamos even earlier than the first class. He was part of the original cadre that arrived in July, 1947, to assist in the transition of duties from the Army to the AEC.

One of the first captains of the AESS was Abner Schreiber, currently Los Alamos County attorney. Neil Seeley, Los Alamos County personnel director, was a member of the first class as were Ralph Bunch

continued on page 23

Above, at the main entrance to the Administration building, is one of the busiest guard stations in any of the technical areas. As the first of hundreds of badge-carriers pass by the station, Inspectors Leo Garcia, at left, and John Drake check out each one. Regulations require that inspectors take the badge in their hands to verify that its holder is entitled to enter an area. Left, Inspector Clayborne Carson compares a face on a badge with that of its holder, Dave Woods, T-6. In the photo at right, Inspector Jesse Wheeless, foreground, checks the badges of Eric Foster and Hubert Alexander, both ENG-6. In background, Inspector Frank Valdez checks a car through the west entrance of TA-3.

Protective Force . . .

continued from page 21

and Dean Wilson, U.S. Civil Service Commission investigators in Los Alamos; Bob Ullrich, current Los Alamos police department assistant chief; plus several members of both the LAPD and the AEC's security branch.

After the first class, an average of a class a month was graduated from Kirtland for duty in Los Alamos and, early in 1948, the training academy was moved to the Hill.

The officer personel roster for early 1948 included the names of two future Los Alamos police chiefs —Jesse Rose and Lloyd Umberhind. Both were in Division II and both were lieutenants.

The AESS continued to grow although by the end of the first year's operations approximately 130 of the 612 who had completed their training had resigned. The reasons cited in 90 per cent of the resignations was "housing."

Housing was scarce at that time for many, but particularly bad for members of the security service who were an entirely new group with no priority rights. In many cases, members of the AESS and their wives were forced to live in separate "single" dormitories—providing the wife could get a job and qualify for dorm space. In the initial announcement by the Civil Service, however, it was noted that "Dormitory quarters, without accommodations for dependents, is the only housing now available . . ." It was also noted that family housing units would be available in 1948.

The first class to report to Los Alamos assumed responsibility for the access gates and DP site from the Army. Thereafter, as each class graduated, the AESS assumed more areas from the Army until it was all AEC by early 1948.

"In the early years," Clow says, "we had two planes—known as Navajo 1 and Navajo 2—plus a number of horses, about a half dozen tanks, mortars, automatic weapons and other such Army gear. We weren't sure in the beginning just exactly how much equipment we would need. However, through the years we gradually cut down as conditions changed and, it was determined that certain equipment and personnel were not necessary."

The basic mission of the Pro Force today, as stated by Edwin Eisenhart, chief of the AEC's security branch in Los Alamos, is "to control access to security areas, permitting only authorized persons to enter, and to assure that all classified material is adequately safeguarded." To accomplish this task, the Pro Force now has about 190 uniformed guards who have completed at least an initial two-week intensive training course upon reporting for duty, plus annual refresher training and periodic weapons qualification and familiarization firing.

The duties of the Force include badge checks, patrols during non-operating hours, repository checks (there are approximately 2,600 safes at LASL to be checked) and operation of alarm systems.

"We are not primarily a plant

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Protective Force . . .

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protection organization," O'Connor notes, "however, in the course of patrols at night through the many technical buildings, the guards do frequently report numerous equipment malfunctions. Such things as broken pipes, flooded rooms, smoking motors, air conditioning troubles, hot coffee pots and the like are routinely discovered, which could result in serious damage to government property.

"We average at least one of these incidents each night and, a number of these, on weekends," O'Connor said.

The Protective Force today is composed of three companies, A, B, and C. Company A has the duty from 11 p.m. to 7 a.m., B is on from 7 a.m. to 3 p.m. and C has it from 3 p.m. to 11 p.m. The shifts are filled on a seniority system with guards "bidding" every four months.

Prior to the start of each shift there is a muster at Station 100 where assignments are made, the guards undergo a uniform inspection and special orders are delivered.

The Pro Force operates in three geographical areas, III, IV, and V. Area III includes DP site, AEC building, Omega Canyon and TA-3; Area IV is primarily Pajarito Road plus HP and Ancho Canyon sites while Area V encompasses S site and most GMX sites. A guard is assigned to an area for four months and rotates each day to a different station in the area. The men work a five-day week and then receive two days off.

All stations are assigned a number, whether fixed or mobile, and each station has to check in with Station 100 every 30 minutes. Most of the stations are one-man stations or patrols.

"We periodically have test drills to test the alertness and knowledge of operating procedures by guards," O'Connor said. "This may involve setting off alarms, attempting to enter an area surreptiously and other tactics to penetrate a security area."

As Eisenhart says, "Security in government dates back only to World War II. Before that, there was little need for security protection." In the last 21 years, nearly 1,500 men have been a part of the AESS or the Pro Force and have helped to make it the efficient and respected organization it is today.

Another duty of the Protective Force is to raise and lower the colors outside the main entrance of the Administration building. Lowering the flag when this photo was taken were Leo Garcia and George Karmazin.

short subjects

Raymond Hanson, N-4, returned to Los Alamos Jan. 1 after serving as an advisor in the Indian Institute of Technology's Electrical Department in Kanpur for 18 months.

Hanson, accompanied by his family, represented the University of California. The University is one of nine American institutions which provides advisory personnel for the Kanpur program.

Hanson is one of two LASL employees to serve at the Indian institute. **Dwight Stephenson,** J-8, completed a 12-month assignment in July of last year. He and his family returned to Los Alamos in November after spending some time in Europe.

The Los Alamos Scientific Laboratory's director, **Norris E. Bradbury,** has been appointed by Governor David F. Cargo to the University of New Mexico Board of Regents.

Bradbury succeeds U.S. District Court Judge Howard C. Bratton, Albuquerque, whose resignation from the Board of Regents was effective Jan. 1. Bradbury will fill Bratton's unexpired term which ends Jan. 1, 1971.

James A. Phillips, P-14 group leader, has been appointed to the newly-created position of secretary for the Southwest and Mountain States Region by the Council of The American Physical Society.

According to W. W. Havens, Jr., executive secretary of The American Physical Society who announced the appointment of Phillips, the duties of the regional secretary include encouraging meetings in his region, including one general meeting on an average of once every two years, to stimulate communications among physicists.

Robert A. Penneman, CMF-4 alternate group leader, has been selected by the Welch Foundation to give three lectures at Texas universities during February.

The Welch Foundation is dedicated to charitable, scientific and educational purposes within the state of Texas. In addition to providing grants-in-aid in the field of chemistry, the Foundation arranges for distinguished chemists to lecture at educational institutions in Texas.

Two Laboratory employees died in December and another died in January. They were **Paul R. Greenbaum,** P-15; **Jose L. Trujillo,** GMX-3; and **Laura Hendrix,** SP-10.

Greenbaum, employed by the Laboratory since 1953, died Dec. 24. Graveside services and interment were at Memorial Gardens Cemetery in Santa Fe. He is survived by his wife, Carlyn, and two sons, Steven and Richard.

Trujillo, a LASL machinist for more than 21 years, died Dec. 30. Following services at St. Francis Cathedral, interment was in Rosario Cemetery in Santa Fe. He is survived by his wife, Ella, and seven children: two sons, Frank and David, and five daughters, Abelina, Roselie, Elsie, Amelia and Lucy.

Mrs. Hendrix died at the Los Alamos Medical Center Jan. 14. She transferred to Los Alamos from the Los Angeles Purchasing Office in 1965. Services and interment were in Bessemer, Ala., her former home. She is survived by two sons, Dennis and Michael.

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For Reporting Change of Address

If your address has changed please inform THE ATOM by clipping and filling out this coupon. Print or type your name and both your old and new addresses.
Mail to: Mail and Records,
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Los Alamos Scientific Laboratory
Box 1663
Los Alamos, N.M. 87544

Previous Address

name

address

city state zip code

New Address

address

city state zip code

new hires

C division

Elmer R. McCoy, Washington, Pa., C-1
Felipe Montoya, Espanola, C-1
Steven M. Sylvia, Espanola, C-1
Stanford P. Lyon, El Rito, C-4
Bobby R. Hunt, Wichita, Kans., C-5

CMB division

Charles D. Brown, Springer, CMB-3
Larry W. Reese, El Dorado, Ark., CMB-11

CMF division

Abelino R. Lovato, Los Alamos, CMF-9

D division

Mary L. Meena, Los Alamos, D-6 (rehire)

Engineering department

Leroy M. Garcia, Santa Fe, Eng-7

GMX division

Antonio I. DeVargas, Espanola, GMX-3
Dan G. Miller, El Paso, Texas, GMX-3
Benlee A. Pentacost, Casper, Wyo., GMX-3 (rehire)
Joseph A. Montoya, Espanola, GMX-8

H division

Frank Weinstein, Boston, Mass., H-1
Margaret R. Owens, Los Alamos, H-5

Mail and Records

Joseph B. Weber, Los Alamos

MP division

Katherine A. Maraman, Los Alamos, (casual-rehire)
Benedict J. Ladabour, Los Alamos, MP-1
William H. Johnson, Los Alamos, MP-3

P division

Leo J. Rivera, Espanola, P-DO
Demetrio Ortega, Penasco, P-15
Richard A. Gutierrez, Santa Fe, P-16

Personnel department

Jo Ann Speakman, Los Alamos, Per-1 (casual)

Shops department

Raymond M. Chavez, Chimayo, SD-1
Landry A. Dominguez, San Juan Pueblo, SD-1

Supply and Property department

Sylvia Naranjo, Santa Clara Pueblo, SP-DO
Barbara A. Temple, Los Alamos, SP-DO
Virginia I. Valigura, Los Alamos, SP-12

T division

Alex L. Marusak, Ennis, Texas, T-6
David W. Forslund, San Jose, Calif., T-12

W division

Henry J. Trussell, Atlanta, Ga., W-4

short subjects

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David W. Steinhaus, CMB-1, was one of ten featured speakers at the 22nd Annual Symposium on Modern Methods of Analytical Chemistry on the Louisiana State University Campus at Baton Rouge.

The event was sponsored by the Department of Chemistry of the College of Chemistry and Physics in conjunction with the Southeast Section of the Society of Applied Spectroscopy.

The invited speakers were recognized authorities in their fields and were given two hours in which to discuss the applications, trends and possible future developments of their specialties.

Irene Crawford, GMX-3, will retire Feb. 28 after more than 16 years with the Laboratory. Mrs. Crawford's husband, Leroy, works in SD-5. They will continue to live in the Valley, and they are making vacation travel plans for spring.

May Bergstresser retired Jan. 10 after 20 years with the Nuclear Microscopy group, now P-10. She and her husband, Karl, who is employed in CMB-1, will continue to live in Los Alamos.

Edwin A. Eisenhart, the Atomic Energy Commission's security branch chief in Los Alamos since 1960, retired Jan. 31, concluding more than 34 years of Federal service.

Eisenhart, his wife Elizabeth and son Thomas, will move to El Paso, Texas, Feb. 8, where they have purchased a new home.

Mrs. Eisenhart also retired Jan. 31 from her position as clerk of the New Mexico Court of Appeals in Santa Fe.

Eisenhart worked in the AEC's Security division in Albuquerque for eight years before coming to Los Alamos. He began his AEC service with the Security division at headquarters in Washington, D.C. in 1947.

The Technical Side

Presentation at 15th Nuclear Science Symposium, Montreal, Canada, Oct. 23-25:

"A High-Resolution Recording System for Neutron Cross-Section Measurements Using an Underground Nuclear Explosive Source" by W. K. Brown, P-3, and A. P. Furnish, P-1

Presentation at Plutonium Research Information meeting, Los Alamos, Dec. 4-5:

"The Band Structures of Cubic Forms of Plutonium and Uranium" by E. A. Kmetko, CMF-5

Presentation at Southwest Regional Meeting of the American Chemical Society, Austin, Texas, Dec. 4-6:

"Isotopic Effects as seen in the Thermal Expansion of Lithium Hydride" by J. L. Anderson, the late F. E. Pretzel, J. E. Nasise, and K. Philipson, all CMB-3

"Nuclear Magnetic Resonance in Aqueous Cobalt (II)—Thiocyanate Solutions" by A. H. Zeltmann, CMF-2, and L. O. Morgan (University of Texas)

Presentation at National Center for Radiological Health Seminar Program, Public Health Service, Rockville, Md., Dec. 6:

"The Problem of Large-Area Plutonium Contamination" by W. H. Langham, H-4 (invited talk)

Presentation at meeting of Council for Advance Programming, San Francisco, Calif., Dec. 9:

"Magnetic Tape Software Modifications" by C. P. Milich, N-4

"Use of Hybrid Simulation Techniques in the Nuclear Rocket Propulsion Program" by T. E. Springer, J. D. Balcomb, H. S. Murray, and C. P. Milich, all N-4

Presentation at Joint Computer Conference, American Federation of Information Processing Societies, San Francisco, Calif., Dec. 9-11:

"TAF—A Steady State, Frequency Response, and Time Response Simulation Program" by O. A. Farmer and T. E. Springer, both N-4

Presentation at 27th High Temperature Fuels Committee Meeting, Atomics International, Canoga Park, Calif., Dec. 10-12:

"Tests of Sodium-Bonded Carbide Fuels" by R. H. Perkins, K-2

Presentation at meeting of Oklahoma Section of the American Vacuum Society, Oklahoma City, Okla., Dec. 12:

"Vacuum and the Actinide Elements" by K. W. R. Johnson, CMB-11

Presentation at Sigma Xi program at Holloman Air Force Base, Alamogordo, Dec. 12:

"Biophysics Research at LASL" by P. F. Mullaney, H-4 (invited talk)

Presentation at seminar on "Graphite Fabrication and Its Effects on Properties," sponsored by AEC Graphite Coordination Working Group, Oak Ridge, Tenn., Dec. 11-12:

"The Effects of Fluid Energy Grinding and Filler Type on the Anisotropy of Hot Molded Graphites" by R. J. Imprescia, CMF-13

"The Effects of the Viscosity and Molecular Distribution of Polyfurfuryl Alcohol Resins on Extruded Graphite Rods" by J. M. Dickinson and E. M. Wewerka, both CMF-13

"Fabrication and Microstructure" by R. D. Reiswig, CMF-13

"The Manufacture and Properties of an Extruded, Resin-Bonded Graphite" by M. C. Smith, CMF-13

"Prediction of Relative Densities of Fabricated Graphite Bodies" by D. D. Lewis, J. M. Dickinson, and R. J. Imprescia, all CMF-13

"Some Electron Microscopic Observations of Graphite" by L. S. Levinson, CMF-13

Presentation at Associated Western Universities—LAMPF Meeting, University of Wyoming, Laramie, Wyo., Dec. 13:

"The Political, Financial, and Physical Status of LAMPF and the Utilization of LAMPF" by L. Rosen, MP-DO

"Experimental Area Design" by D. R. F. Cochran, MP-6

"LAMPF Design Status" by E. A. Knapp, MP-3

"LAMPF Proton Area" by R. L. Burman, MP-6

Presentation at Student Chapter of the AIAA, New Mexico State University, Las Cruces, Dec. 16:

"Thermionics" by W. H. Reichelt, N-5

Presentation at American Physical Society Meeting, San Diego, Calif., Dec. 18-20:

"The d(p,p_1)d* Reaction at $E_p \simeq$ 13.0 MeV" by A. Niiler, P-DOR, W. von Witsch and G. C. Phillips, both Rice University, Houston, Texas

"The Decay of ^{111}Pd and ^{111m}Pd" by G. J. Berzins, M. E. Bunker, and J. W. Starner, all P-2

"The Fission Cross Section of ^{237}U" by J. H. McNally, W-8, K. Wolfsberg, B. J. Dropesky, and J. W. Barnes, all J-11

"Ferroelectric Properties of the Systems Pb Fe(Nb, Ta)(Zr, Hf)O_3" by M. W. Valenta, V. J. Johnson, both W-3, R. E. Cowan, CMB-6, and R. M. Douglass, CMB-1

"Shock Hugoniots Calculated from the Statistical Model of the Atom" by J. F. Barnes, T-5

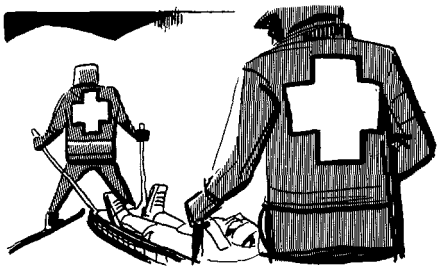
"Shock Initiation of High-Density PETN and XTX-8003" by Dante Stirpe, J. O. Johnson and J. D. Wackerle, all GMX-7

"Stress Wave Profiles in Several Hard Porous Materials" by J. W. Hopson and J. W. Taylor, GMX-6

Presentation at the M. D. Anderson Hospital and Tumor Institute, Houston, Texas, Jan. 7:

"Biochemical Events in the Mammalian Cell Cycle" by D. F. Petersen, H-4 (invited talk)

20 years ago in los alamos



Culled from the Feb., 1949 files of the Los Alamos Skyliner by Robert Porton

Tech Area Expansion

The relocation, reconstruction and expansion project of the Los Alamos Scientific Laboratory received impetus this week when the AEC invited bids for the construction of buildings and related services at one of the new technical area sites. The project will include 18 reinforced concrete structures complete with utilities.

Flying Green Lights Alert Constabulary

Shades of flying saucers? Los Alamos now has flying green lights. These will-o'-the-wisps, seen generally about 2 a.m., have the town buzzing. All official inquiries bring the same answer: "Quien sabe?". Carroll Tyler, project manager, said simply that all he knew about the lights was rumor—the same rumor that everyone is hearing. A call to Kirtland Air Base brought a response from a captain who asked that his name not be used—"because he didn't know anything". He was eager to learn, though. There was even speculation—could these be visitors from Mars? Have you seen a green light lately?

Two Feminine Organizations Formed

Still more clubs have been added to the Hill's already teeming social life. The Los Alamos Woman's Club was formed this week. A resolution, introduced by Mrs. John Panowski, and adopted, set forth the Club's intention to affiliate with the National Federation of Women's Clubs. Next week, the charter banquet of the Los Alamos Toastmistress Club will be held at Fuller Lodge. A number of local women will be honored as charter members.

Four Fractures Featured

Four bone fractures in two week-ends, a dozen sprains and assorted burns, bruises and contusions, have made the Los Alamos Ski Patrol a veteran crew. Organized this season under the leadership of John Orndoff, the ten members have already made good use of first aid and snow rescue training. Members of the Patrol include Diz Graves, Henry Laquer, Bill Stein, Cliff Nilsson, Jim Coon and Perc King.

Conant Visits

Dr. and Mrs. James B. Conant visited Los Alamos this week. The distinguished member of the General Advisory Committee to the U.S. Atomic Energy Commission met with Laboratory officials. Conant is president of Harvard University. He was the technical advisor to Major General L. R. Groves during the days of the Manhattan Project.

what's doing

MESA PUBLIC LIBRARY EXHIBITS: Representational oils by Kim Slusser, Santa Fe, Feb. 5 through Feb. 27; Opera Guild Exhibit, Jan 23 through Feb. 20.

PUBLIC SWIMMING: High School Pool—Mondays, Tuesdays and Wednesdays from 7:30 to 9 p.m., and Saturdays and Sundays from 1 to 6 p.m.; Adult Swim Club, Sundays, 7 to 9 p.m.

CHORAL SOCIETY: Starting work on spring concert, "Israel in Egypt," by Handel. Scheduled for presentation in mid-May. Rehearsal each Tuesday at 7:30 p.m. in Fuller Lodge. For information call John Ward, 8-4554.

OUTDOOR ASSOCIATION: No charge; open to the public. Contact leader for information about specific hikes.

- Feb. 8—Caja del Rio—Reed Elliott, 2-4515
- Feb. 23—American Springs and Water Canyon—Dorothy Hoard, 672-3356

RIO GRANDE RIVER RUNNERS: Meetings scheduled for noon, second Tuesday of each month at South Mesa Cafeteria. For information call Cecil Carnes, 672-3593.

SIERRA CLUB: Luncheon meeting at noon, first Tuesday of each month, South Mesa Cafeteria. For information call Brant Calkin, 455-2468, Santa Fe.

CONCERT ASSOCIATION: St. Paul Chamber Orchestra, Feb. 12, 8:15 p.m., in Civic auditorium. For information call Mrs. Henry Filip, 2-2135.

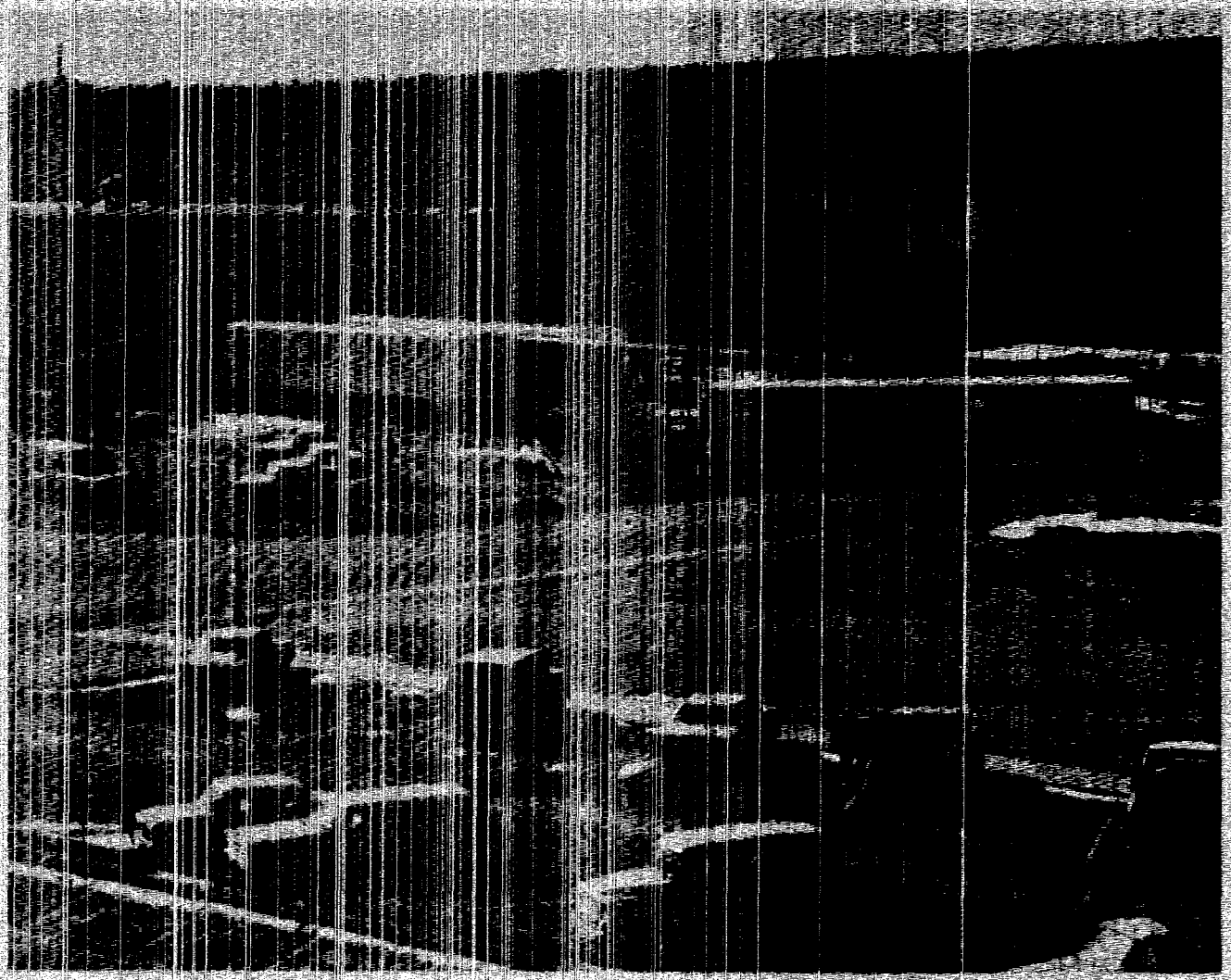
LOS ALAMOS SKATING ASSOCIATION: Schedule for use of ice rink, Los Alamos Canyon:

- Mondays: General session—3 to 5 p.m. and 7 to 9:30 p.m.
- Tuesdays: Mothers and tots—9:30 to 11:30 a.m. General session—3 to 5 p.m. and 7:30 to 10 p.m. L.A. Skating Club, members only—6 to 7:30 p.m.
- Wednesdays: General session—3 to 5 p.m. and 7 to 9:30 p.m. Hockey—9:30 to 11 p.m.
- Thursdays: Mothers and tots—9:30 to 11:30 a.m. General session—3 to 5. L.A. Skating Club, members only—6 to 7:30 p.m. Adults only—7:30 to 10 p.m.
- Fridays: General session—3 to 5 p.m. General game-night session—7 to 9:30 p.m.
- Saturdays: Hockey—9 to 11 a.m. General session—2 to 4:30 p.m. and 7 to 9:30 p.m.
- Sundays: L. A. Figure Skating Club group and individual lessons—8 a.m. to 1:30 p.m. General session—2 to 4:30 p.m. L.A. Figure Club, members only—6 to 7:30 p.m. Adults only—7:30 to 10 p.m.

For information, call 2-4500, during rink hours.

LOS ALAMOS SKI CLUB: Pajarito Mountain, tow runs from 9 a.m. to 4 p.m., weekends and holidays. Rental equipment available.

- Ski School schedule—Group lesson, 6 to 12 students, 1½ hours, 10:30 a.m. and 1:30 p.m. Semi-private lesson, up to 5 students, 1 hour, 10:30 a.m., noon, and 1:30 p.m. Young children's class, kindergarten and up, 6 to 12 students, 12:15 p.m.



Group J-1 was scheduled to move from the Administration building into trailer offices north of the CMR building Jan. 27. The group will occupy the two that are nearest to the building. Two other trailers, one of which is shown being moved in, will be assigned to another J-division group. A covered walkway has been constructed between the trailers.

Henry T. Hall
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Los Alamos, New Mexico 87544